
Customs Systems and Infrastructure Overview



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The goal of this Customs Systems and Infrastructure Overview is to assist potential bidders on the Customs Modernization contract by providing background information about the United States Customs Service information technology (IT) environment. This information is not a comprehensive description of the Customs IT environment. In addition, the information provided in the following sections is not static, but constantly changing. However, it should provide a general understanding of the scope and variety of systems required to accomplish the Customs mission. The descriptions should not be misconstrued as providing a description of the necessary requirements nor preferred approaches to Customs modernization. Substantial detailed information is also provided in the bidders' library for Customs Modernization.

This Customs Systems Overview is organized in four sections:

- **Current Systems** – Describes the most important systems currently in use by Customs. The Automated Commercial System (ACS) is given more detail because it is the leading candidate to be the first system modernized by Customs.
- **Enterprise Infrastructure Environment**– Describes the current IT infrastructure at Customs.
- **Initiatives, Prototypes, and Systems Under Development** – Describes many of the IT initiatives, prototypes, and systems under development at Customs. The Automated Commercial Environment (ACE) and International Trade Data System (ITDS) are given more detail because they are leading candidates to implement the modernized trade compliance process.
- **References** – Provides a list of references for further information on these systems.

1.0 Current Systems

Customs has a large number of automated systems in operation today to support its business functions. Each of these is being maintained and in some cases improved to meet new requirements or to improve reliability and performance. The key systems currently in use are described in this section, but the list is not inclusive of all systems. The systems are organized by four categories of systems: commercial, enforcement, administration, and other.

1.1 Commercial Systems

1.1.1 Automated Commercial System (ACS)

ACS is an automated information system that tracks, controls, and processes all goods imported into the United States, including protests and summons to court. Through the use of Electronic Data Interchange (EDI), and the automated targeting of high risk shipments, ACS facilitates merchandise processing, significantly cuts costs, and reduces paperwork requirements for both Customs and the importing community. The system became operational in 1984 and continues to implement improvements, enhancements and new features. It operates 24 hours a day, 365 days a year on one large mainframe in Newington, Virginia. ACS currently collects more than \$20 billion in revenue annually.

Since its inception, ACS has expanded in scope to meet the growing demands of the import trade and other government agencies that interface or otherwise depend on the automated system. ACS currently interacts with 2,500 trade users and other agencies via dial-up or direct lines. Over 97 percent of all import entries filed are now transmitted to Customs electronically. Ninety-five thousand airway bills and 60,000 ocean bills of lading are received weekly from carriers electronically. By the year 2000, it is anticipated that \$2.6 trillion in merchandise will be imported into and exported from the United States. The expansion of world trade and proliferation of trade agreements will place new and ever-increasing demands on ACS processing. ACS is comprised of seven major processing modules that are described below:

- **Automated Broker Interface (ABI):** The Automated Broker Interface, originally designed for communications with automated brokers, now provides a communications link for the transmission of entry and entry summary data on imported merchandise among all ABI users (brokers, importers, carriers, port authorities and computer service centers) and ACS. ABI saves Customs considerable data entry time and provides better quality data in a timelier manner. ABI benefits the importing community by expediting general examination releases and providing timely entry and import information.
- **Automated Manifest System (AMS):** The Automated Manifest System is both an imported merchandise inventory control and a cargo release notification system. AMS is a means of speeding the flow of cargo through an electronic release notification system reducing paperwork for both Carriers and Customs. AMS participants and Customs have both realized multiple benefits from greater control, better communications and a shorter holding time for imported cargo.
- **Cargo Selectivity System:** The cargo selectivity system is a principal enforcement tool that specifies the type of examination (intensive or general) to be conducted for imported merchandise. A database of cargo selectivity criteria is established by National Import Specialists (NIS), national and local

intelligence units, the Operational Analysis Staff (OAS) and local enforcement disciplines. This database of criteria is used to assess risks.

- **Collections System:** The collections system is the billing and accounting system for ACS. The optional automated clearinghouse feature (ACH) of ACS accepts electronic funds payment capability from the importing community.
- **Entry Summary Selectivity System:** The entry summary selectivity system provides an automated review of entry summary data to determine whether commodity specialist team or routine review is required. National and local entry summary selectivity criteria are matched to the input data for review determination.
- **Quota System:** The quota system controls quota levels of imported merchandise established by Presidential Proclamations, Executive Orders or other legislation.
- **Special Projects:** The Special Projects system area provides programming support that greatly influences processing accuracy and efficiency within the ACS System Environment (e.g., ACS Control Program maintenance, security file structure enforcement).

The following additional processes execute within or in support of the ACS System Environment:

- **National In-Bond System:** The National In-bond system provides a means of transporting merchandise from one port to another in the United States. It controls merchandise in-transit from a port of unlading to a port of entry or exportation.
- **Line Release System:** The line release system tracks and releases highly repetitive shipments at land border locations. Customs scans a bar code into a personal computer, verifies that the bar code matches the invoice data, enters the quantity, and releases the cargo. The cargo release data is transmitted to ACS, which establishes the requirement for an entry summary, and provides ABI participants with release information.
- **Drawback System:** The drawback system processes and controls all types of drawback entries, and eliminates many clerical tasks. Drawback is the refund of import duties previously paid. Filers can submit a drawback claim to Customs on a diskette. Customs then uploads the information to ACS. This ensures that the data is quickly and accurately recorded in ACS and results in faster claims processing and issuance of drawback payments. Immediate acceptance or rejection of data is available.

- **Statement Processing:** Statement processing allows ABI filers to pay multiple ABI entry summaries with one check or payment transaction. Customs generates a preliminary statement of summaries due and transmits the statement to the filer through ABI. The filer prints and reviews the preliminary statement, updates the statement with additions or deletions, and submits a final statement with payment. Statement processing reduces the processing time for collection and acceptance of an entry summary. In addition, filers using statement processing are eligible to participate in ACH.
- **Automated Clearinghouse (ACH):** ACH is an electronic payment option that allows ABI filers to pay Customs fees, duties, and taxes with one electronic transaction. Filers transmit payment authorization to Customs through ABI. The payer's account is debited and the Customs account is credited with the amount due. The accuracy and speed of ACH results in a higher volume of completed transactions for the importing community and Customs, saving time and money.
- **Liquidation System:** The liquidations system involves the process of confirming and/or determining the final liability or refund amount due to or from brokers or importers. Upon the "final" determination, filers are either billed for underpayment of duties, sent a refund check for overpayment of duties, or are notified that the transaction has been settled or appropriately paid.

1.1.1.1 ACS Program Inventory

Table 1.1.1.1-1 provides an inventory of each major application comprising ACS and their respective sizes in terms of lines of program code and number of programs, by component name.

Table 1.1.1.1-1 Inventory of ACS Modules

Application	Lines of Code	Number of Programs
Air Manifest	187,770	104
ABI	2,075,634	1,163
Collections	1,746,115	636
Quota	208,724	196
Rail/Sea Manifest	415,891	250
Special Projects	354,837	275
Selectivity	884,098	399
ACS Total	5,873,069	3,023

1.1.1.2 ACS Data Environment

Currently, ACS utilizes approximately 1,000 Computer Associates (CA) Datacom databases.

Indications of the current size and volume of ACS are noted below. Specifically, ACS includes or involves:

- One thousand CA Datacom databases
- Three thousand database tables consisting of 4.4 billion records of data
- Databases range in size from 1 million to 300 million records
- Processing one million transactions per day, resulting in 500 million database requests
- Running 65,000 batch jobs per day
- Growth in volume of 20 percent annually

1.1.1.3 ACS Interfaces

As a highly integrated system environment, ACS supports a considerable number of processing module interfaces. Additionally, many interfaces exist between ACS and a number of external entities: Customs Brokers/Importers, International Carriers, Port Authorities, Banks, other Government Agencies, etc.

The primary user interface is through a 3270 terminal interface or emulator. The data is stored in CA Datacom, DB2, and Oracle databases. The system is accessed by more than 20,000 Customs employees and 2300 customs brokers in support of 500,000 importers. Customs employees are concentrated at 300 Ports of Entry throughout the country and handle air, sea, and land cargo imports. Architecturally, the trade and government agencies may communicate with ACS through the Automated Broker Interface (ABI). ABI accepts inputs as small batch jobs that are wrapped in Job Control Language, and include the EDI data to be processed. Multiple requests can be included in one ABI message. ABI supports the following two interfaces:

- MQSeries is a transaction oriented, message queuing interface that has been operational for 4 years. MQSeries can be used for all external requests today. MQSeries is being promoted to improve processing efficiencies throughout ACS. An MQSeries message contains only the EDI request with its associated data elements. Multiple EDI requests may be included in one MQSeries message.
- JES2 is a batch oriented, commercial-off-the-shelf (COTS) Remote Job Entry/Job Entry Subsystem input/output queuing software, which was modified in the mid 1980's along with the implementation of a toll-free

800 dial rotor. This increased the productivity of ABI, manifest, and export functions for many years. It is a thirty-year-old product, originally developed to support card readers and card punches. Customs has employed an emulation capability to make modern devices look like these obsolete input/output devices. The product is a critical component, taxed to maximum capacity and cannot keep up with the real-time, on-line trade transaction volumes and requirements.

External interfaces to the system are defined in the Customs and Trade Automated Interface Requirements (CATAIR) book. Interfaces for the automated manifest systems (AMS) are defined in the Customs Automated Manifest Interface Requirements (CAMIR).

Customers typically expect a response time of 30 seconds or better from the system. The peak hours are from 9 am to 6 pm EST, but there are other high demand peaks in the other hours.

1.1.1.4 ACS Development Platform

A considerable number of languages, automated tools, and operating environments, have or are being used to maintain ACS's operational accuracy and efficiency. These are:

- OS/390 V2R7 – *IBM communication server*
- Netview V1R2.0 – *IBM Network Performance Monitor V2R3.0*
- Routeview V3.0.16
- JES2, Release 2.7, JES 4 – *Job Control system environment*
- ACF/NCP Version 7, Release 6
- NPSI, Version 3.8
- CA-TPX(R) Release 5.0 – *Multiple terminal session controller*
- CA-Top Secret(R) V5R1.0– *Security Package*
- CA-DATACOM/DB(R) Release 9.0 – *Primary Database Platform*
- Oracle V8 – *Client Server systems database platform*
- CA-Librarian MVS 4.2 – *Application Software library manager*
- CA-ENDEVOR V3.8.0 – *Life-Cycle software manager*
- OS/390 V2R7.0 Language Environment – *Language environment that supports COBOL LE, Assembler, and C*
- HLASM V1R3 - High Level Assembler – *Assembler compiler and environment*

- CICS/ESA V4R1 – *IBM Online CICS version*
- CICSplex SM V1R4.0 – *CICS complex manager*
- MQSeries V2.1 – *MQ message queuing facilities*
- MQ Version 5.1 – *For distributed environment*
- CA-InterTest Batch V 1.2 – *Batch debugger*
- CA-InterTest Release 5.4 – *CICS online debugger*
- OS/390 V2R7.0 TSO/E – *Text editor programming environment*
- CA-Roscoe(R) Release 6.0 MVS – *Text editor programming environment (primary)*
- CA-DATAQUERY(R) Release 9.0 – *File query/maintenance facility for Datacom files*
- CA-DATAREPORTER for Release 9.0 – *4GL file query, maintenance, and reporting facility for Datacom files*
- CA-Easytrieve Plus V6R2 – *4GL maintenance/reporting facility for general purpose*
- CA-Sort MVS 7.0 – *Internal and External system Sort Facility*
- CA-7(R) Release 3.2 (Dispatch, Scheduler) – *Automatic Job scheduling and distribution facility –*
- Compuware AbendAid – *CICS transaction abend diagnostic tool*
- Compuware Playback V6.2 – *CICS Screen capture/audit facility*
- VPS 7.0 – *Virtual Print Services for 5,000 printers*
- SyncSort MVS V3R7 – *MVS Sort package for batch and utility programs*
- CA11 V2R2 – *Job management software*

A number of additional tools are used for the Border Release Advance Screening and Selectivity system (BRASS). These include:

- Enterprise edition of Windows NT 4.0 SP4
- Enterprise edition of Visual Interdev 5.0 and 6.0 and Visual Studio (including VB, Visual C++, Visual J++)
- Oracle 8I Enterprise edition including: Designer, Developer, Developer server, Application/Web Server, Jdeveloper, Discover Administrator/End User, Report Server
- Microsoft Office 97 and 2000 (primarily Access 97 and 2000)
- IBM MQ Server and Light Client 5.1

- Inprise Jbuilder 3, Enterprise editions of Jbuilder 3, C++ Builder 4 and Delphi 5
- VideoSoft VS OCX version 5 and 6
- APEX True DBGrid version 5 and 7

1.1.1.5 ACS Fiscal Year 1999 Initiatives

Although ACS has typically been a very reliable system, there have been some serious degradations in service that have raised concern. For example, on September 14, 1998, a volume-related impasse triggered a systems crash that interrupted import processing. If it had occurred at another time, it could have delayed the collection of \$60 million in revenues. Two weeks later, a disk crash delayed collections for 6 hours and had the potential to stop the flow of \$2.2 billion worth of goods across the border (Customs Today). Steps were taken to improve the situation, including:

- Upgrading the processing power on the mainframe by 66%
- Beginning the replacement of MTS with MQSeries to provide a faster and more robust interface
- Archiving over 200 million records to reduce the potential recovery time

In addition to accommodating system changes and enhancements due to changes in regulations, trade program negotiations, Presidential proclamations, etc., a number of major ACS initiatives are underway for fiscal year 1999:

- **Performance Improvements:** Comprehensive archiving and redesign of large ACS databases, to minimize impact of hardware failure; streamlining of programs to improve processing speeds.
- **MQSeries Conversion:** Changes in system software and applications (using IBM MQSeries technology) to accommodate increase in trade volume. Removes technical limitations in the production system and eliminates reliance on obsolete, in-house developed system software.
- **Customer Enhancements:** System enhancements requested by ACS users; over 5,000 internal Customs users and over 3,000 members of the trade community. Approximately 533 change requests have been addressed since the beginning of fiscal year 1999.
- **Maintenance:** On-going corrections to system programs based on Operational Problem Reports; problems encountered in production programs, and Testing Problem Reports generated as a result of Y2K or other system modifications.

1.1.2 Automated Export System (AES)

The Automated Export System is a production system initiated to provide an information gateway through which trade and government may exchange export data needed to ensure compliance with export laws while also facilitating trade. The system supports the outbound process at seaports, airports, and land borders. The functionality supports license management, the PASS program, drawbacks, in-bonds, electronic funds transfer, and compliance measurement.

AES is a joint venture between the U.S. Customs Service, the Foreign Trade Division of the Bureau of the Census (Commerce), the Bureau of Export Administration (Commerce), the Office of Defense Trade Controls (State), other Federal agencies, and the export trade community. It is the central point through which export shipment data required by multiple agencies is filed electronically to Customs, using Electronic Data Interchange (EDI). AES is a voluntary system that provides an alternative to filing paper Shipper's Export Declarations (SEDs). Export information is collected electronically and edited immediately, and errors are detected and corrected at the time of filing. AES is a nationwide system operational at all ports and for all methods of transportation. It was designed to assure compliance with and enforcement of laws relating to exporting, improve trade statistics, reduce duplicate reporting to multiple agencies, and improve customer service. AES has the goal of paperless reporting of export information by the year 2002. AES replaces the Automated Export Report Program (AERP).

1.1.3 Customs Automated Port Profile System (CAPPS)

CAPPS provides reports on compliance rates for commercial shipments entering the United States. In addition, it provides discrepancy rates for imported merchandise that is examined as a result of non-compliance measurement (CM) targets. This information allows Customs Officers to assess the effectiveness of their cargo exam targets, while also identifying areas of risk, so that they can focus their resources in areas that will improve the Trade's compliance with importing laws and regulations. It is distributed as a Windows application with data warehouse on CD-ROM.

1.1.4 Macro Analysis and Trending Systems (MATS)

MATS provides users with the ability to easily retrieve data for the analysis of trends and profile areas for 19 data elements, including HTS, AD/CVD case numbers, consignees and importers using graphical representation of ACS and Census data.

1.1.5 Issue Management System (IMS)

IMS provides a central database for tracking the issues and activities involving the Office of Strategic Trade. Information can be sorted and queried, and each record provides an instant and complete overview of the details for any given issue.

1.1.6 Account Activity Tool (AAT)

AAT provides the user with multiple years of entry data related to a specific account. Included in this tool is the ability to view entry release and entry summary transactions along with all related files. The AAT also allows the user to view account data for compliance measurement and non-compliance exams. The AAT is importer and consignee based. It provides a complete view of the account including line item entries, examinations, and other related ACS files.

1.1.7 Numerical Integrated Profiling System (NIPS)

NIPS provides a graphical interface for ACS data. NIPS allows the user to identify trends and anomalies in import data which may be indicative of illegal activities. These trends are not limited by port. Analyses can be done by commodity, importer, manufacturer, country of origin, port of entry, visa category, and broker. NIPS also allows for comparison of 7501, 3461, Bank Secrecy Act data, and Export Data.

1.1.8 Account Selection Database

The Account Selection Database presents calculated risk scores for accounts based on company rank, import volume, PFI activity, and compliance history.

1.1.9 NAFTA Database

The NAFTA Database contains information on NAFTA claims reviewed by U.S. Customs including: the exporter and producer, rule of origin, blanket Certificate dates, tariff numbers, and findings.

1.1.10 Entry Summary Findings Analysis System (ESFAS)

ESFAS enables the production of reports on Entry Summary targeting effectiveness. Used in conjunction with CAPPS for collecting compliance rates, the Entry Summary Findings Analysis System assists Customs Officers to identify risk areas so that they can focus their resources on areas that will improve the Trade's compliance with importing laws and regulations.

1.1.11 Laboratory Information Measurement Systems (LIMS)

LIMS provides a ready reference for officers to retrieve and display laboratory reports on samples and issues. The reports can be queried in a number of ways, including entry number, case number, importer, exporter, and HTS numbers.

1.1.12 Operational Analysis System (OAS)

Operational Analysis System (OAS) is the system used to provide analyses of information to support the targeting and enforcement functions of trade compliance. The results of analysis are used to define or update business rules for those functions. OAS obtains data from ACS.

1.1.13 Border Release Advance Screening and Selectivity (BRASS)

Border Release Advance Screening and Selectivity (BRASS) (Line Release) tracks and releases highly repetitive shipments at land border locations. Customs scans a bar code into a personal computer, verifies that the bar code matches the invoice data, enters the quantity, and releases the cargo. The cargo release data is transmitted to ACS, which establishes an entry and the requirement for an entry summary, and provides ABI participants with release information. BRASS incorporates all of the old Line Release functionality into a Y2K compliant NT desktop solution and enhanced statistical targeting for port specific data. Over four million trucks are processed per year through approximately 50 locations.

1.1.14 Regulatory Audit Management Information System – RAMIS

Regulatory Audit Management Information System – RAMIS is an applications currently running on an NT SQL server located in the Ronald Reagan Building, Customs headquarters facility. Connectivity to the system is through the Wide Area Network for the Regulatory Audit principal field offices. Other offices access the system through a secure dialup method. The portion of the system currently on the NT SQL is referred to as the audit life cycle. It encompasses data relating to the audit referral, audit assignment and activation, audit report issuance, audit acceptance, audit collections, audit closure or cancellation, significant findings, periodic status of an audit, and hours expended on an audit. Other modules or processes to be integrated with this life cycle portion consist of: the annual planning process; the top compliance assessment candidates, joint NAFTA verifications, and other regulatory audit programs; account profiles; automated work-papers and reports; the national archive system; compliance measurement; the Issues Management System; and the trade enforcement plan. Several of these modules or processes are currently running as independent, stand-alone prototypes, such as the annual planning process and the universes of top players.

1.2 Enforcement Systems

Several systems provide law enforcement capabilities to ensure all goods and persons entering and exiting the United States do so in compliance with all United States laws and regulations.

1.2.1 Treasury Enforcement Communication System (TECS)

TECS is the cornerstone of Customs' information management strategy for providing support for federal law enforcement missions. The primary mission of TECS is to support inspection personnel at borders and ports of entry, but a variety of other mission areas are also supported, including investigations, interdiction, and intelligence analysis.

TECS provides major automation for the Interagency Border Inspection System (IBIS), serving as the clearinghouse for law enforcement data, as well as providing border inspection support software and communications. TECS also provides

significant support for the Seized Asset Case Tracking System (SEACATS). Within TECS, a suite of different subsystems provides a number of query capabilities and access to other systems. The subsystems are grouped into the following application areas:

- **Information Sharing:** Permits online entry and maintenance of subject records and provides access to external data sources including National Crime Information Center (NCIC), National Law Enforcement Telecommunications system (NLETS), and commercial databases.
- **Inspection/Interagency Border Inspection Service (IBIS):** Supports passenger processing at airports, land borders, and seaports through the implementation of border control technologies.
- **Intelligence and Investigations:** Used to manage legal investigations and cases. It provides complete case management capabilities and enables users to collect, analyze, and distribute intelligence data for targeting and investigative purposes. It also enables online entry of enforcement reports. It provides support for Air Operations, ATF efforts, Intelligence Documents, Internal Affairs, Marine Operations, Enforcement and Investigation, and Telephone Analysis.
- **Management Information Reporting:** Provides access to reports and generation of reports and queries. It supports data analysis, data quality, and access to multi-source databases
- **Security and Integrity Applications:** Supports tracking for internal discipline actions in Customs; Internal Affairs (IA) administration including background checks, suspect user processing, surveillance, and fictitious data processing; IA case management, IA management, and others.
- **General Support Applications:** Other, general-purpose administrative and personal productivity capabilities, including tracking Currency or Monetary Instruments (CMIRs), email, help,
- **New Technology Applications:** Various technologies including biometric data transfer and imagery capture and display.

1.2.1.1 TECS Program Inventory

TECS consists of 2571 programs with an aggregate 7,000,000 lines of code.

1.2.1.2 TECS Data Environment

TECS consists of 458 CA-Datacom databases.

Table 1.2.1.2-1 provides a snapshot of TECS transaction volume for all of the supported 322 types of transactions.

Table 1.2.1.2-1 TECS Transaction Volumes, 1–31 July 1999

Airport	22,092,152
Landborder	21,193,385
Production	30,209,608

1.2.1.3 TECS Interfaces

There are approximately 32,000 active TECS users across about 30 other federal enforcement agencies. Agencies using TECS include: Customs, INS, ATF, IRS, Secret Service, State Department, DEA, FinCen, Agriculture, and Interpol.

The following external interfaces are supported by TECS:

- INS: For I-94, NAILS-Lookouts
- National Crime Information Center (NCIC): for wanted persons, stolen vehicles, and criminal histories
- National Law Enforcement Telecommunications System (NLETS): for motor vehicle registration, driver licenses, and criminal histories
- ARINC & SITA: for advance passenger information (API) from carriers
- IRS: for bank secrecy act data
- State Department: for Class-E-Lookouts
- Commercial databases: including Dun & Bradstreet (business information), Official Airline Guide (airline schedules), CrissCross (demographics and telephone information), TRW Redi data (real estate transfer and valuation information), and Metronet (current and historical information on individuals and organizations based on their telephone number)

1.2.1.4 TECS Development Platform

TECS operates on a Hitachi Data Systems Skyline 52 mainframe. Applications are predominantly written in COBOL and employ CICS for transactional processing. The vendor tool BRS is used for text indexing, search, and retrieval. Select SE is used for data modeling.

1.2.1.5 TECS Fiscal Year 1999 And Future Initiatives

A number of future initiatives and enhancements to TECS have been planned. These include:

- **Fingerprint data:** Addition of a capability to transmit and receive fingerprint and other biometric data

- **Graphical user interface:** Development of a graphical user interface for users
- **Case management systems:** To support a reengineered case management process. The current case management process is administered at a local level using nonintegrated solutions and technologies. The conversion from this nonintegrated, paper/online process to a predominantly online process will offer advantages in the ability to catalog, share, process, analyze, search, retrieve, assemble, disassemble, disseminate, and manage the information. A redesigned case management process will also support geographically disperse personnel.
- **Interface to NCIC-2000:** To enhance capabilities from existing NCIC interface.
- **Field Operations-oriented enhancements:** airport secondary enhancements, license plate reader enhancements, incident reporting, and self declaration.
- **OI/Intelligence-oriented enhancements:** Telephone linking system, air operations enhancements, and ad hoc reports (ongoing)
- **INS-oriented enhancements:** Airport primary enhancements, INSPASS reporting, nonimmigrant/immigrant visa validation, and conversion of NAILS to TECS

1.2.2 Seized Asset and Case Tracking System (SEACATS)

The Seized Asset and Case Tracking System (SEACATS) tracks all activity associated with seizures from the initial enforcement interest in the property until its final disposition. Activities include: recording values associated with the property; tracking and recording costs associated with the seizure, maintenance, storage, and disposition of the property; processing all financial activity associated with the property to include fines, collections, and equitable sharing of proceeds from the disposition of the property with other law enforcement entities. Agencies which are members of the Treasury Forfeiture Fund are: U.S. Customs, Secret Service, Alcohol, Tobacco, and Firearms (ATF), and Internal Revenue Service (IRS).

1.2.3 Automated Targeting System (ATS)

The ATS System contains four major components:

- **ATS-Anti-Terrorism (ATS-AT)** – supports the Congressional mandate for the Customs to develop a system able to target high-risk outbound shipments aboard passenger aircraft. This decision support tool helps the Customs more efficiently interdict, investigate, and support prosecution of violators of outbound laws, embargoes, and sanctions, with the primary focus on terrorism, currency, stolen vehicles, and controlled commodities. A rule-based expert system, ATS-AT automatically reviews electronically filed export

documentation processed through the Automated Export System (AES). Through its rule manager, ATS-AT compares each documentation record with inspector-defined criteria for high-risk shipments and ranks the shipments based upon their level of suspicion. Guided by the results of the system, inspectors can devote more of their time to likely export violations.

- **ATS-Passenger (ATS-P)** – Replaces the Worldwide Alien Narcotics Trafficking System (WANTS) effective October 1999. In continuing to serve the Combined Agency Border Intelligence Network (CABINET), ATS-P will target suspects for transnational crimes, including narcotics trafficking and money laundering. It will offer every available I-94 record and will provide users with a CICS interface, and by March 2000, a Web interface. It supports both interfaces with the same Oracle stored procedures.
- **ATS-Narcotics (ATS-N)** – Assists Customs inspectors and other field operations staff by performing high-speed automated review and analysis of shipment data, and ranking shipments by level of suspicion for illegal narcotics activity. ATS-N will provide inspectors with a Web-based decision support tool to:
 - Screen arriving cargo for narcotics or contraband and other violations of import regulations and laws
 - Target suspicious shipments for examination
 - Seize contraband or initiate controlled delivery to apprehend the involved criminals
 - Assess and collect fines and duties owed to the United States under prevailing tariffs, regulations, and law
- **Trend Analysis and Analytical Selectivity Prototype (TAP)** – Improves Customs ability to examine, locate, and target for action violations of United States laws, treaties, quotas, and policies regarding international trade. TAP offers trend analysis and targeting components. The trend analysis function summarizes historical statistics that provide the “big picture” of trade activity for commodities, importers, manufacturers, shippers, nations, and filers. The targeting component reviews shipments and generates risk scores for imports. Targeted findings allow users to perform research in the trend analysis component and detect other areas of noncompliance. The trend analysis component lets users identify anomalous trade activity in aggregate. By rapidly reviewing shipping documentation and identifying high-risk shipments, TAP allows import specialists to devote more time to potential trade violations, thus improving the effectiveness of trade law enforcement.

1.2.4 Advanced Passenger Information System (APIS)

Advanced Passenger Information System (APIS) is a database built and shared by commercial airlines, Customs, the Immigration and Naturalization Service (INS), and

the Animal Plant Health Inspection Service (APHIS), all partnered through a common memorandum of understanding (MOU). Through this process, the airline industry can electronically provide basic passenger identification information to INS and Customs prior to the arrival of passengers in a port's federal inspection service processing facility. The airlines get this information when passengers check-in at foreign ports and transmit it while the flight is en route. For the government, high quality advance passenger information means all three federal inspection service agencies benefit from improved enforcement and regulatory processes. Advanced biographical information is obtained on 80% of international air passengers. The primary benefit for air carriers is a decrease in processing time for passengers. Most international passengers will be cleared through the inspection process in 30 minutes or less.

1.3 Administration Systems

Customs Administration Systems provides a collection of more than 40 individual applications constituting three basic functional groups: financial systems, human resources management systems, and field administrative systems. These applications vary greatly in the size of the target user base; from those supporting a small limited constituency to those used by every employee of the Agency.

Customs financial systems support users in the Office of Finance as well as a broad spectrum of headquarters and field users and carry out an array of required budget, logistics, payroll, procurement and accounting functions. Customs financial system is commonly referred to as the Asset Information Management System (AIMS), and is comprised of Customs core general ledger application, the Federal Financial System (FFS) and many ancillary financial applications that interact with FFS. All of these functions are linked to core budget tables to ensure effective funds control and all have interfaces to FFS for recording accounting transactions.

The human resources management (HRM) systems provide specific support to the personnel process. HRM applications mirror the process flow for vacancy announcement, recruitment, pre-employment screening, and recording and tracking the various personnel actions that take place during an employee's career. In addition to on-line transaction processing HRM systems provide an Interactive Voice Response (IVR) component called "Pathfinder" which allows employees to gain access for reviewing and changing their personal information.

The field administrative systems provide capabilities for administrative functions other than finance and human resources, supporting the roles for many offices in the Customs organization. Firearms tracking, badge inventory, and travel processing are examples of these functions.

The Administration Systems are primarily programs written in COBOL II executing on an IBM mainframe based CICS system using a Datacom Database. There are slightly over 4,100 mainframe programs containing just over 7.25 million lines of

code. The oldest Administration Systems are approximately 12 years old with development of the full system occurring fairly evenly over the past 12 years. In addition several of the applications use either EZTRIEVE or SAS.

The Administration Systems use interface links to major systems at Treasury, Department of Agriculture (USDA), Dept. of Labor, U.S. Postal Service, OMB, Federal Express, and Citibank.

The following list provides brief descriptions of the major mainframe applications within the Administration Systems:

1.3.1 AGPA Payroll

This system provides a language translator for communications between the USDA and Customs systems.

1.3.2 ASDM Access Request System

Assists the user with obtaining access to administrative systems by transmitting requests electronically to the appropriate officials for approval.

1.3.3 Asset Information Management System (AIMS)

The Asset Information Management System (AIMS) is the financial system consisting of the Customs core general ledger application, the Federal Financial System (FFS) and the many ancillary financial applications that interact with FFS.

1.3.4 Automated Receiving Report System (ARRS)

Permits registration of purchase order line item and receiving information. ARRS matches the invoice to the electronic receiving and sends accounts payable records to FFS.

1.3.5 Badge Inventory Control System (BICS)

Developed for and used by the Training Academy in Glynco, Georgia, to maintain up-to-date information on all badges issued.

1.3.6 Budget Execution

Allows field executive managers to request a budget for review and approval by the budget director in Headquarters. The system also provides the ability to transfer, reprogram, and create spending plans for the current operating year.

1.3.7 Career Development and Review System (CADRE)

Used by the Office of Investigation to monitor and manage their personnel resources throughout the Customs. This system allows employees to record and maintain their own records of foreign language abilities (read/write/speak), education, training, honors, awards, and other special skills.

1.3.8 CF-16 Transaction Reporting System

Used in the field to enter various monthly statistical information pertaining to land and vessel clearance, pre-clearance, classification and mail transactions.

1.3.9 Compensation Accident Reporting Safety System (CARSS)

Receives Work Compensation payment data quarterly from the Department of Labor, permitting review of claims and payments, and allowing updating of payment data including premium pay, 1911 overtime and AUO pay.

1.3.10 Crosswalk

Implemented following Customs reorganization, this application serves as translator automatically converting old organization codes to new codes.

1.3.11 Customs Automated Pre-Employment Tracking System (CAPES)

Designed to track the pre-employment process and the random drug testing process, including drug testing conducted by other Treasury agencies. Pre-employment processing ensures that all applicant requirements are successfully completed; including, background investigation, a medical examination, a tax check, drug screening, and supervisory training.

1.3.12 Customs Automated Travel System (CATS)

Provides electronic processing of three travel forms: a travel authorization (granting authority to travel), a travel advance (authorizes the travel to obtain advance funds for the travel), and a travel voucher (reporting all expenses associated with the trip).

1.3.13 Customs Logistics Automated System (CLAS)

Permits entry of approved purchase requisitions and pertinent purchase/delivery order information. Purchase orders and amendments are printed for distribution to the vendor. Enables tracking of bid solicitations and contracts, procurement milestones, outstanding deliveries, and other procurement actions.

1.3.14 Customs Overtime Scheduling System (COSS)

A new application providing time and attendance functions, overtime cap monitoring, overtime scheduling functions, budget reporting, staffing level reporting, and a variety of other reporting/tracking functions. COSS was commissioned in response to the Customs Officer Pay Reform Act (COPRA), as implemented under the National Inspections Assignment Policy (NIAP), and the aging of existing automation systems that provide administrative and logistical support.

COSS will ultimately replace a number of automated systems; including Work Tickets, Premium Overtime Pay Information System (POPI), the Time and Attendance Management System (TAMS), as well as a number of smaller, locally developed systems.

1.3.15 Detector Dog

Tracks all canines currently assisting Customs agents and reports monthly on each dog's performance in detecting contraband.

1.3.16 Federal Express Invoicing and Accounting System

Receives an electronic transmission of billing invoices from Federal Express for review and approval by the Office of Finance. Remittance information is transmitted back to Federal Express linking a specific check number with the invoices, and includes documentation regarding bills that Customs will not pay.

1.3.17 Federal Financial System (FFS)

The AIMS Federal Financial System (FFS) is a customized COTS (purchased off the shelf) developed by American Management System, Inc. (AMS) and is used by several Treasury bureaus to interface with Customs systems to reconcile financial records. The FFS performs multiple accounting functions such as general ledger, disbursements, and report capabilities. Historical records are maintained for audit purposes, record of obligations, expenditures, cash control, budget execution (supplied by Customs Budget Execution System), travel (supplied by Customs Automated Travel System - CATS), invoice, prompt pay, purchasing-invoice (supplied by Customs CLAS-ARRS-BPA System), and for interfacing with USDA, ACS, and Work Ticket payroll systems.

1.3.18 Field Survey System

Provides the ability for management to conduct surveys throughout Customs.

1.3.19 Firearms Information Tracking System (FITS)

Enables tracking of all firearms and body armor issued to Customs employees. The system provides processes for qualifying Customs employees to use certain firearms, and for requesting and approving transfers of weapons.

1.3.20 Full-Time Equivalency (FTE)

Reports work hours in terms of FTEs, providing information for planning and budgeting purposes.

1.3.21 Human Resources Data System (HRDS)

Though used by U.S. Customs, HRDS was developed and is maintained by the Department of Commerce with modifications and enhancements made upon request by Customs. It is a central repository of personnel and payroll information, which has been processed through the Customs Integrated Personnel/Payroll System (CIPPS) operated at the USDA. HRDS is an on-line management tool providing personnel, payroll, and financial information depicting human resources distribution and costs. The system includes more than 200 reports providing a history of performance ratings and awards, suspense reports for WGs, temporary promotions and temporary appointments, retirement eligibility, age and length of service

information, salary and benefits cost information, position sensitivity, and a variety of aggregate statistical displays such as average grade, average salary, and diversity data.

1.3.22 Invoice Processing System (IPS)

Receives billing invoices from Citibank for fleet card fuel and maintenance expenses. Accounting information is fed to FFS and payments are initiated.

1.3.23 Legal Case Inventory System (LCIS)

Used to maintain an inventory of legal cases that pertain to the Customs. This is a stand-alone system that executes several programs created via ROSCOE and allows entry and retrieval of case information.

1.3.24 Legal Precedent Rulings System (LPRS)

A research tool designed to assist users in identifying and recovering legal rulings and decisions germane to the importing community. This system permits maintenance of the Legal Precedent Index database, a master file of case document numbers and keywords from various Legal Precedent documents. Batch programs are executed quarterly as requested by ORR to format several microfiche reports for distribution to the legal community.

1.3.25 Management Controls Reporting System (MCRS)

Provides the capability to establish, monitor and track the results of periodic compliance reviews.

1.3.26 Organization Table On-Line

Provides a facility for administrative systems users to view the current organization code table.

1.3.27 Personnel Action Request Tracking System (PARTS)

Enables field personnel to initiate SF-52 requests, electronically transmit them to Headquarters, and to monitor their progress toward completion. HRM personnel can then complete the information, provide a complete history of all stages through which these records pass, prepare them for entry to the USDA system, and receive a number of reports to monitor the progress of requests and the performance of Personnel Management Specialists.

1.3.28 Personnel Data From USDA

The U.S. Department of Agriculture (USDA) located in New Orleans, Louisiana, processes all personnel and payroll data for the Customs. On a bi-weekly basis, immediately after the payroll has been processed, USDA sends Customs a file of all personnel and payroll information as of the end of the pay cycle. This information is then processed by Customs to update the its personnel files.

1.3.29 Postage Request and Tracking System

Provides agency-wide postal support services.

1.3.30 Premium Overtime Pay Information System (POPI)

Monitors the use of employee overtime by individual, organization, region, district, port and agency. The results are fed into the USDA payroll system.

1.3.31 Project Cost Accounting System (PCAS)

A purchased off-the-shelf extension of the AIMS Federal Financial System (FFS) enabling Customs managers to define a series of valid projects and sub-projects per fiscal year and to summarize commitments, obligations, and expenditures in comparison to project budget targets.

1.3.32 Property Information Management System (PIMS)

Permits on-line input, update, and inquiry of property inventory. Tracking of Customs property is accomplished by use of bar-code technology for scheduled physical inventories.

To keep more extensive track of Customs owned and leased vehicles, the Vehicle Inventory Management System (VIMS) was developed as a fully integrated subsystem of PIMS. In addition to capturing additional data about vehicles in the Customs property database, VIMS provides for the monthly input of operations usage and maintenance activities for every Customs owned and leased vehicle.

1.3.33 Purchase Card System

Automates financial and administrative processes for credit card purchases by authorized employees, interfacing with both FFS for fiscal accounting and with PIMS for tracking of property and equipment.

1.3.34 Reports Management System (RMS)

A customized COTS system developed by AMS using SAS to integrate select reports into a single menu driven application with access to financial and accounting data captured by AIMS.

1.3.35 Revenue Table Maintenance

Allows Customs accountants to establish and maintain the tables that define the general ledger transaction code rules. These rules serve as a language translator between Customs commercial operations and the AIMS accounting system.

1.3.36 Software Tracking and Reporting System (STARS)

Provides a "One stop shopping" customized software application that tracks new development software applications and enhancements to software applications for all Customs organizations. This system allows for automated conveyance of online service requests, update information, status reports, and audit trail facts for data processing services, new software development, and enhancements to software.

1.3.37 Staff-to-Budget

Enables managers to review actual personnel expenditures and project these costs for their organization. This provides “what-if” modeling capabilities that simulate various personnel situations.

1.3.38 Time And Attendance Management System (TAMS)

Provides biweekly time and attendance processing including maintenance of employee master records, on-line review and approval of T&A data, and audit processing.

1.3.39 Training Records and Enrollment Network (TRAEN)

Automates the initiation, review and approval of requests for government and non-government sponsored training courses. The system provides a full history of all training courses taken by each Customs employee and produces an on-line course catalog of training provided by the Glynco Training Academy and field locations.

1.3.40 Vacancy Announcement Applicant Control System (VAACS)

Automates much of the recruitment processes performed by Human Resources Management (HRM) beginning with the issuance of a Vacancy Announcement and ending with the selection of eligible applicants off a referral list.

1.3.41 Vacancy Announcement Listing (VAL)

Provide the capability for field users to view a listing of all open vacancies in the Customs and those that have closed within the previous two weeks.

1.3.42 Work Ticket System

A batch cycle that collects data and calculates COPR overtime earnings. Results are fed to FFS and TAMS for ledger posting and subsequent payment. Because COPR services are billable to the party-in-interest, this data is also fed to ACS which, in turn, issues bills and refunds.

1.3.43 PC-Based Systems

The Administration Systems also use several off the shelf and in-house developed PC-based applications. The following lists a few examples of these applications with brief discussion of each. There are other such applications not individually mentioned that use various languages and databases. Some of the PC-based Administration Systems are currently being converted to a web browser format.

Users install many of these on Customs LANs for access. Many other applications are developed at local sites by users and are not managed by OIT. A sample of some of the applications follows:

1.3.43.1 Correspondence Tracking System (CTS)

A web based intra-office correspondence tracking system.

1.3.43.2 Cost Management Information System

The Cost Management Information System (CMIS) is an application used in the Office of Finance that provides managers with a variety of unique costing views to enhance their decision making process. The Cost Management Information System project was undertaken in response to senior management's interest in:

- Enhancing the accountability of Customs financial and program oversight
- Providing better data for decision making
- Increasing the efficiency and effectiveness of services provided by Customs.

Three main sources of data are used in CMIS: Customs legacy systems, selected cuff systems, and surveys of activity time. Data downloaded from Customs legacy and cuff systems are first imported into either Microsoft Access, a relational database, or Excel, a spreadsheet application. The data is then modified within either software package and imported to HyperABC. Survey information is manually entered into either an Excel or Access file and then imported to HyperABC.

HyperABC uses the data to calculate activity and output costs, which are then exported back into Access. The results are linked to the reporting tool that presents the cost data via user-friendly, Graphical User Interface-based screens.

Current support for OF by MSB consists of providing assistance in building and modifying COGNOS Powerplay "Cubes." These instruments are used to analyze prior FY organizational expenses.

1.3.43.3 Copier Tracking System

Copier is a Microsoft Access 2.0 database application used in the Office of Finance that tracks both the total number of copiers within Customs and those that are leased.

1.3.43.4 Customs Measurement Analysis System (CMAS)

The Customs Measurement Analysis System (CMAS) supports the collection and analysis of 18 performance measurements to ensure conformance to the 1993 Government Performance and Results Act (GPRA). The measurements include narcotics seizures from cargo, trade compliance rates, and percentage of air travelers who clear Customs within five minutes. The system was implemented with SAS 6.12 and SAS IntraNet.

1.3.43.5 Customs Tracking System

The Customs Tracking System was originally designed as an application for the Office of International Affairs. The Office of International Affairs (INA) tracks all tasks (correspondences) that they receive and process. These tasks are received from within the organization or from external agencies. Previously, this process was

tracked on paper and was labor intensive. All statistical and reporting data was compiled by hand. Additionally, it was difficult to determine quickly which tasks were currently open and/or overdue and information flow was restricted to the physical location of the task itself.

This system is a replacement for the original paper-driven system. It allows users to enter task information into a web page, assign the task or correspondence to a second party, and, upon completion, "close" the task. Any number of individuals can view the data associated with a task throughout the "work cycle". Status information is also be available via interactive search pages.

The application has been adapted for use throughout Customs headquarters. It is currently in release 2 final testing.

1.3.43.6 Document Management System - Electronic Free

The Document Management (DMS) - Electronic Freedom of Information Act (EFOIA) system is an off the shelf document management and tracking system used by the Office of the Commissioner to support three major requirements: correspondence control, electronic FOIA, and customer complaint handling. The system will be modeled on a similar system at the Department of Energy. The initial focus will be replacing the Correspondence Control Tracking System (CCTS) that supports the Commissioner's Office, with expansion to the E-FOIA and complaint handling requirements, plus expansion to other HQ offices and, eventually, the field. The system will allow all incoming correspondence to be scanned into the system as images, then routed to assigned offices electronically. Responses will be developed electronically with MS/Office tools, linked to the incoming images, routed for input/concurrence, then routed back to the Commissioner's Office for signature. This same basic process will also be used for the E-FOIA and complaint handling requirements, with modifications as needed for unique functionality.

The COTS software is PC-DOCS. The project is currently in the product evaluation phase of the SDLC. The evaluation phase will continue from 10/1/99 through 3/31/99. After this date, if successful, it will be implemented throughout Customs Headquarters.

1.3.43.7 Executive Communications Staff Correspondent

The Executive Communications Staff Correspondence Tracking System (ECS CTS) is a an inter-office correspondence tracking system using Foxpro for Windows Client/Server database and PCDocs. It was designed in 1996 to replace a UNIX database application. This application is in its final months of use and is being replaced by the DMS-EFOIA project.

1.3.43.8 Historic Customs Building Database

Historic Customs Buildings Database (HCBD) is a Microsoft Access 2.0 application for the Office of Information and Technology. This database maintains an inventory

of all U.S. Customs Buildings that have been declared historic. The application is located on the headquarters LAN and is used by the Historian of Customs.

1.3.43.9 Internal Affairs Tracking System

The Internal Affairs Tracking System used to keep track of the Internal Affairs users' tasks by task tracking number. It is a Microsoft Access 97 application.

1.3.43.10 International Affairs Budget Tracking System

The International Affairs Budget Tracking System is a Microsoft Access 2.0 database application that tracks Office of Internal Affairs' yearly budget.

1.3.43.11 International Affairs Passport Tracking System

International Affairs Passport Tracking System (INA PTS) is a Web-enabled database application that maintains information on passports issued by the Customs to Customs employees. It is currently undergoing final testing for conversion from a Microsoft Access 2.0 database application. The application consists of active server pages and an Oracle database maintained at the Newington Data Center.

1.3.43.12 International Affairs Temporary Duty Trainer

The International Affairs Temporary Duty Trainer (INA TDY) Database is a Web-enabled modification to an original Foxpro for Windows application. It tracks Customs personnel who have volunteered for or already given Customs process training to personnel overseas. The project is currently in the requirements phase.

1.3.43.13 Office Of Field Operations Team Tracking System

The Office of Field Operations Team Tracking system (OFO TTS) is a complex client/server database application used by both OFO Staff and the Strategic Problem Solving Project within OFO. This consists of two tiers of Microsoft Foxpro databases: (1) at the user level and (2) at headquarters. Designed prior to the advent of Internet technology, this application uses automated cc:Mail scripts at both the field LAN and Headquarters LAN. These scripts transmit field TTS databases to headquarters where they are incorporated into a master TTS database. Once incorporated, this database is transmitted to the fields for review. The purpose of the database is to gather and share ideas/projects to further the effectiveness and efficiency of Customs Inspectors and agents.

1.3.43.14 Office of Finance Interagency Agreements

The Office of Finance Interagency Agreements (OFIA) database is a Microsoft Access 97 application that tracks contractual agreements between the Customs, Office of Finance and other government agencies. It tracks the IAs, name, number, amount, increases/decreases, accounting data, POC, etc.

1.3.43.15 Office of Information and Technology Financial Database

The Office of Information and Technology Financial Database is a Microsoft Access 97 application that tracks funding for each of OIT's organizational entities. Additionally, it tracks procurement requests against this funding.

1.3.43.16 Planning and Budget Tracking Database

Planning and Budget Tracking Database (PBTRACK) is a Web-enabled application consisting of active server pages and an Oracle database both maintained at the Newington Data Center. It is currently undergoing design in the Management Systems Branch.

MSB currently tracks all project and contractual information manually. Information used in executing projects comes from multiple sources and is not coordinated. This application will centralize all software design project tracking.

1.3.43.17 PRATS For Windows

The PRATS for Windows application is a legacy Windows 3.1 application originally designed for the Office of Finance that interfaces with mainframe PRATS data and downloads stamp data and meter data from the mainframe. It also uploads the MMS data to the mainframe.

1.3.43.18 Program For Relocation Information and Moving Expense (PRIME)

A customized COTS system developed by AMS using GUPTA SQLBase and SQLWindows. This system tracks authorizations, advances, vouchers and third party information for employee relocations. The interface to mainframe financial systems uses SAS.

1.3.43.19 Quality Recruiting

A PC based pre-application screening and tracking system using Visual Basic and Oracle.

1.3.43.20 Quality Space Management System

The Quality Space Management System is a legacy database application that maintains and tracks Space and Quality Control information on Customs buildings. It is a Microsoft Access 97 application that uses Visual Basic 6.2. A VB component is used for general tracking and data entry and the Access 97 database is used as the database and to create parameterized reports.

1.4 Other Systems

A number of additional applications and systems provide organization-wide capabilities.

1.4.1 Enterprise Data Warehouse (EDW)

The Enterprise Data Warehouse extracts data from many transactional systems to enable easy, flexible analyses by Customs staff. The EDW consists of the wholesale data warehouse, the retail data warehouses, the mechanisms to transport data among the transaction systems and the wholesale and retail warehouses, and the coordination necessary to ensure timely and appropriate delivery of data. The wholesale data warehouse acquires data from ACS, ACE, TECS, Administrative and Financial Systems, the Automated Export System and other sources and stores the data in a Datacom-based repository. Data from the main data warehouse is then pushed periodically to smaller data marts on individual Oracle databases residing on Unix systems. The data marts are custom designed for specific Customs users. The users analyze the data in the data marts using Cognos Powerplay and Impromptu. Future systems developed by the Contractor will need to support data feeds to the Enterprise Data Warehouse.

1.4.2 Resource Data Warehouse (RDW)

The Resource Data Warehouse (RDW) is a new project that contains financial information to be used by budget personnel. It provides a single source of definition and validation of elements of core financial and administrative data. The Office of Finance RDW, originally planned to be a forerunner of Office of Information Technology's EDW, is now planned as a subset, both to be integrated into one technology. Unlike EDW, which pulls all data to a Central repository, RDW brings the data directly from the source to the data mart.

2.0 Enterprise Infrastructure Environment

The Customs enterprise infrastructure environment is a collection of heterogeneous clients, servers, mainframes, printers, and other peripherals loosely tied together with an X.25 network. A number of initiatives have been proposed or are under way to improve various aspects of the infrastructure environment. These initiatives are summarized in Section 3.0 and are also described throughout this section.

The structure provided by the Customs Enterprise Architecture will be used to describe the current infrastructure baseline and planned and proposed initiatives to achieve a strategic (target) state.

The Customs Enterprise Architecture consists of four main views:

- Work
- Business
- Information
- Infrastructure

This Customs Systems and Infrastructure Overview summarizes the Work Views to provide a context for the users and locations that need to be supported by the infrastructure. Infrastructure Views are also described in some detail. The Enterprise Architecture Repository and associated documentation should be consulted for further information on all views.

2.1 Work Views

The Enterprise Architecture includes Work Views that describe:

- External Entities
- Business Operating Units (of Customs)
- Work Locations
- User Groups
- Roles
- Key Personnel
- Assignment Profiles

The following summarizes work locations, user population, and external entities:

2.1.1 Work Locations

Customs has approximately 955 field offices throughout the United States. The sites can be characterized as being small, medium, large, and extra large. The relative number of each site size and the associated number of end users are shown in Table 2.1.1-1. These figures are estimates and were derived from an April 1999 Seat Management Study.

Table 2.1.1-1 Customs Sites and Population

Site Size	Range in Number of Users	Percentage of Customs Sites	Percentage of Customs Population
Small	1-10	65.2%	11%
Medium	11-85	29.9%	37%
Large	86-300	4.4%	30%
Extra Large	More than 300	0.5%	22%
Total		100%	100%

Customs sites can be grouped by function into the following categories:

- **Customs Management Centers (CMCs).** The CMCs (20) are internally focused and provide both process management and mission support services to the Ports. The CMCs assist the Ports in strengthening and improving high quality, uniform services.
- **Ports of Entry (POE).** A POE is the initial point of contact for cargo and passengers entering the United States. POEs are driven by business processes—trade compliance (import/cargo), passenger and outbound (export)—and are responsible for processing conveyances and people, acceptance of entry documents, collection of duties, and release of merchandise into general commerce. POE enforces the US laws and the regulations of other agencies involved in international trade.
- **Strategic Trade Centers (STCs).** Responsible for identifying and forecasting issues concerning strategic industry trade and researching and analyzing the Customs issues involved. STCs manage intervention actions and provide primary liaison for the Office of Strategic Trade with Special Agents in Charge (SAIC), CMCs, and POEs in developing operationally sound intervention plans.
- **Investigations Field Offices.** SAIC Offices are responsible for the administration and management of all enforcement activities within the geographic boundaries of the Office. They are responsible for ensuring that all enforcement activities are conducted pursuant to national policies and procedures and contribute to the development and implementation of national and SAIC level enforcement strategy.

2.1.2 User Population

Customs manages and maintains registered user access IDs for approximately 36,000 users—not only Customs users, but also users from OGAs and Customs Trading Partners. Customs has approximately 20,000 internal users.

The types of users supported by the OIT Support Organization are shown in Table 2.1.2-1.

Table 2.1.2-1 End User Type

Analytical Workers	Workers who perform analysis using decision support tools.	22%
Mobile Workers	Workers who are on the road and in the field.	12%

Knowledge Workers	Workers who gather, add value to, and communicate information in a decision support process.	15%
Structured Task Workers	Workers who perform the same tasks repetitively.	50%
Data Entry Workers	Workers who input data into computer systems.	1%

The occupations of Customs staff are shown in Table 2.1.2-2.

Table 2.1.2-2 Occupations of Customs Staff (as of 1998)

Occupation	Total Staff
Inspector	7,397
Other Employees	4,702
Agent	2,789
Import Specialist	1,238
Customs Aid	932
Canine Enforcement Officer	640
Entry Specialist	469
Intelligence Research Specialist	359
Auditor	339
Pilot	317
Total	19,182

2.1.3 External Interfaces

Customs currently has links to the following 23 OGAs:

- U.S. Department of Agriculture (USDA)
- Animal and Plant Health Inspection Service (APHIS) (multiple lines)
- Fish and Wildlife Service (FWS)
- Food and Drug Administration (FDA)
- Department of Commerce
- Department of Defense, Inspector General, Washington, DC
- El Paso Intelligence Center (EPIC)
- Federal Aviation Administration, March Air Force Base

- Department of Justice (multiple lines)
- Federal Bureau of Investigation (FBI), Washington, DC
- National Crime Information Center (NCIC), Washington, DC
- National Law Enforcement Telecommunications System (NLETS), Phoenix, AZ
- Federal Reserve Board, Washington, D.C. (multiple lines)
- U.S. Coast Guard (multiple lines)
- Internal Revenue Service (IRS), Criminal Investigations Division
- IRS Data Center, Washington, DC
- U.S. Secret Service
- Bureau of Alcohol, Tobacco, and Firearms (ATF)
- Bureau of Engraving and Printing (BEP)
- State Department, Washington, DC
- State Department, Diplomatic Security
- Canadian Customs and Excise
- California Law Enforcement Telecommunications System (CLETS)

In addition, Customs has links to 22 American Embassies.

2.2 Infrastructure Views

Within the Customs Enterprise Architecture, the Infrastructure Views provide information about the technical infrastructure from several perspectives:

- The TRM Profile describes Customs-approved standards, service areas, and associated products.
- The TRM Platform View delineates classes of platforms such as mainframe, client/server, desktop/PC, and intranet/web.
- The TRM Component view includes categories of components, such as application server, enterprise database server, user workstation, and others.

This document focuses on the service areas and associate products of the TRM Profile. Both baseline (current) and strategic (target) states are described. In some cases strategic plans may not be fully determined.

2.2.1 Current Network and Platform Architecture

The network and platform architecture for Customs is shown in Figure 2.2.1-1.

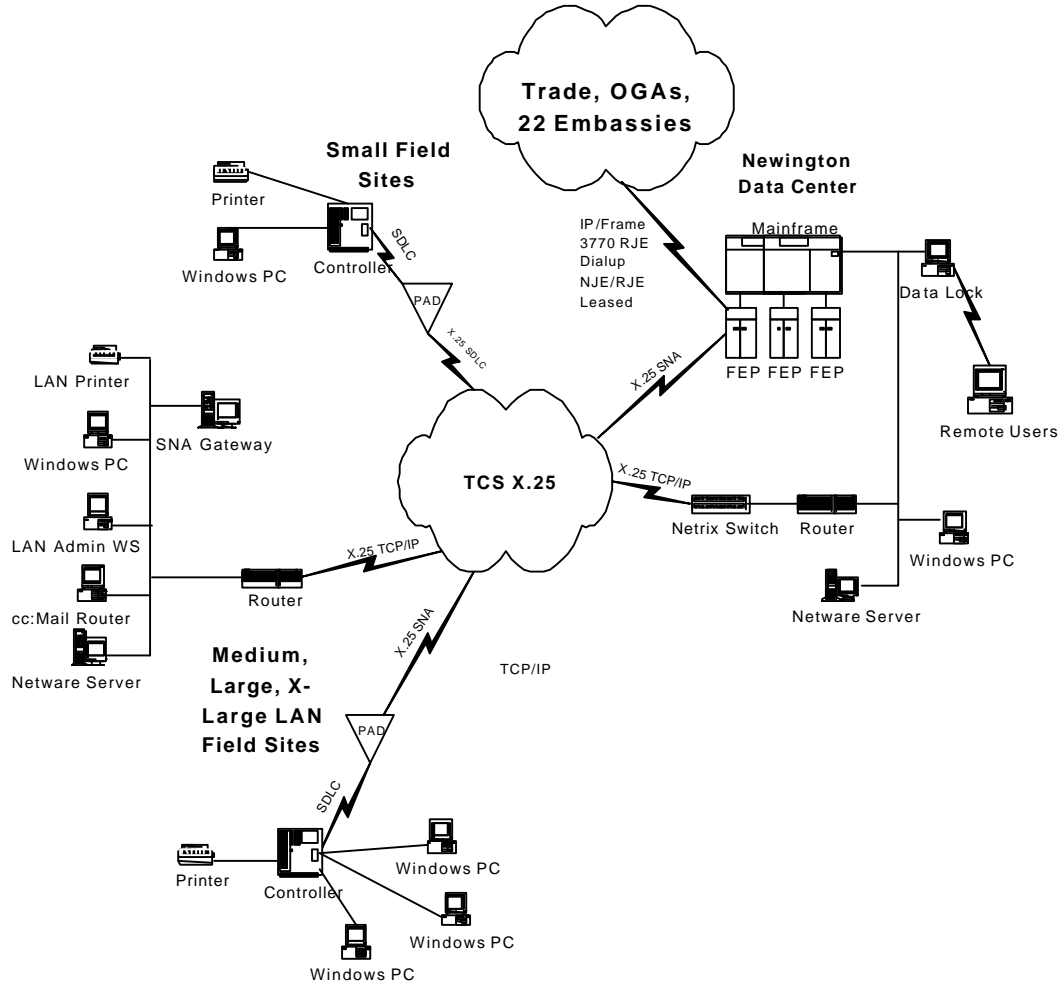


Figure 2.2.1-1 Current Customs DCE Architecture

2.2.2 Planned Network and Platform Architecture

A planned network and platform environment architecture for Customs is shown in Figure 2.2.2-1.

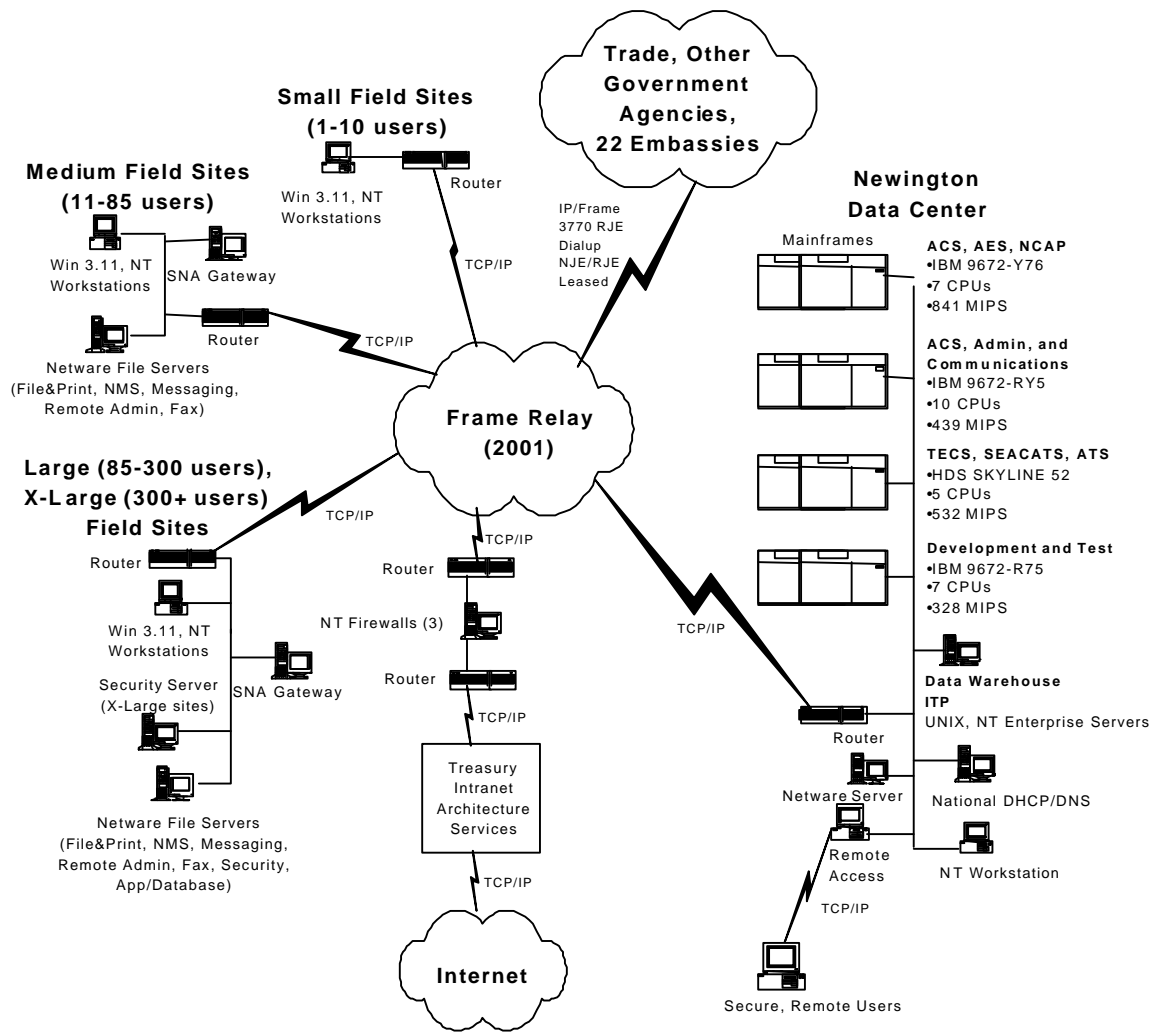


Figure 2.2.2-1 Planned Network and Platform Architecture

2.2.3 Major Infrastructure Activities

Major infrastructure improvement activities include:

- Implementation of the Frame Relay network
- Conversion from Class B to Class A IP addressing scheme
- Transition to an NT environment
- Migration to a new messaging system, Lotus Notes
- Y2K initiatives

- Initiation of programs to achieve automated Help Desk, asset management, network management, remote diagnostics, software delivery, etc.
- Consideration of a managed service provider for desktops and NT servers.
- Initiation of programs to detect, protect, and react to cyber intrusions
- Planning for Customs Modernization program, including the development of the Enterprise Architecture and the associated Technical Reference Model

The TRM provides information regarding the current baseline for infrastructure products, and includes other life cycle timeframes for them including the tactical, strategic, emerging, mainstream, containment, and retirement.

2.2.4 Infrastructure Details

The infrastructure currently in place is described in the following sections. These sections are organized to correspond to platforms and the service areas defined within the current Customs Enterprise Architecture (EA) Technical Reference Model (TRM) (with some additions).

2.2.4.1 Platforms

2.2.4.1.1 Mainframes

Customs currently has four (4) mainframe processors with more than 8 terabytes of Direct Access Storage Devices (DASD) and one National Application Server located in its Data Center. All mainframe processors are International Business Machines (IBM) plug-and code-compatible, and operate under the IBM Multiple Virtual Systems/Enterprise Systems Architecture (MVS/ESA) - OS/390 operating system. These mainframes are currently sysplex; there are initiatives to move to parallel sysplex.

Customs mainframe computer capacity ratings are supplied in terms of Millions of Instructions per Second (MIPS) with a total capacity of 2,140 MIPS, which includes the following:

Table 2.2.4.1.1-1 Customs Mainframes and Processing Power

IBM 9672-Y76	841 MIPS
IBM 9672-R75	328 MIPS
IBM 9672-RY5	439 MIPS
Hitachi Data Systems (HDS) Skyline 52	532 MIPS
Total	2,140 MIPS

Customs has upgraded its mainframe systems every two years to accommodate the increased ACS workload volume, as well as for the multi-processing limitations of the CA-DataCom/DB database.

2.2.4.1.2 Servers

Customs has about 30 UNIX servers with a combination of IBM AIX 7015 and Solaris 3000/3500 and 6000/6500 series platforms. Customs also uses NT servers. This environment supports financial, general administrative, targeting, and data warehouse applications as well as network management (Tivoli).

Customs is in the process of moving all Unix-based applications from IBM AIX to SUN Solaris. Unix servers running ATS and other applications currently running on Unix servers in the field are also in the process of being moved to NDC where they will operate on Sun Solaris.

The AS400 in Chicago supporting Cabinet/WANTS is planned to be migrated to a Sun at NDC.

Approximately 2.5 terabytes of data are stored on distributed servers.

2.2.4.1.3 Desktop PCs

The current distribution of workstation infrastructure assets is shown in Table 2.2.4.1.3-1. (Note that this particular analysis, the Distributed Computing Environment [DCE] Benchmark, included Windows-based servers along with end-user workstations.) The following asset data was obtained from Customs Office of Information Technology (OIT) staff and Network Information Management System (NIMS) reports. Client PC counts have been estimated by the number of active mainframe connections. Although not completely accurate, the data is sufficient to provide relative quantity comparisons.

Table 2.2.4.1.3-1 Typical Network Summary: Assets by Type

Servers	1%
Desktop Clients	50%
Mobile Clients	8%
Peripherals	33%
Communications Devices	8%

The Table 2.2.4.1.3-2 contains the estimated number of assets included in the DCE Benchmark.

Table 2.2.4.1.3-2 Asset Inventory

Asset Type	Number of Assets
File Servers Total	504
NT 3.x	2
NT 4.x	42
NetWare 3.x	450
NetWare 4.x	10
Intel Desktop Clients	20065
Intel Laptops	3232
Departmental Printers/Plotters	6811
Personal Printers/Plotters	5901
Shared Scanners	8
Light Pen/Bar Code Readers	1330
CD-ROM Server	436
FAX Server	267
Hubs/MAUs	2928
Switches	51
Router/Brouters	58

The relative number of client types is illustrated in Table 2.2.4.1.3-3. Many users utilize more than one DCE client type (e.g., users having both a desktop and laptop) which results in a ratio of 1.2 clients per user.

Table 2.2.4.1.3-3 Client by Type

Window 3.x Desktop	40%
Windows NT 4 Desktop	47%
Windows 3.1 Portable	3%
Windows 95 Portable	4%
Windows 98 Portable	0.1%
Windows NT 4 Portable	6%

Figure 2.2.1-1 depicts current network and platform architecture as sized for small, medium, large and extra-large Locations. Most assets are in service an average of 60-months before replaced. Older, replaced PCs are recycled at less critical locations or sites not compatible with newer PCs.

About 9000 Year 2000 non-compliant PCs have been replaced with new NT workstations.

Figure 2.2.2-1 depicts planned Enterprise DCE architecture as sized for small, medium, large and extra-large locations.

Approximately 2300 client PCs at 500 of the 955 field sites connect to the TCS WAN using mainframe controllers or SNA gateways. At those field sites, 460 LANs service 15,000 users (86% of total users). There are 500 terminal controller locations serving 2300 users (14% of total users).

Service Areas and Domains

The following service areas are described along with their associated domains:

- User Environment
- Application Services
- Data Management Services
- Integration Services
- Common Services

2.2.4.1.4 User Environment

Workstations

Both Microsoft Internet Explorer (IE) and Netscape Navigator are used within Customs. IE is the target browser.

While current PC configurations and applications are not completely standardized (e.g., some have Word Perfect and some have Word), all *new* PCs are configured according to standard client specifications that include the following types of software:

- Windows NT Workstation
- Novell client software
- Microsoft Office Professional suite
- cc:Mail

- Internet Explorer
- Terminal emulation software
- Internally developed business applications

Customs has plans to migrate to Microsoft Word by the end of calendar year 1999 for year 2000 compliance.

Note that initiatives are underway to replace both cc:Mail and Novell client software.

Personal Productivity Tools

Customs has standardized on Microsoft Office Professional 4.3. Previously, Customs employed WordPerfect, MS Project, Harvard Graphics, MS Office, and Lotus 1-2-3.

User Analysis Tools

Cognos is currently being used for query formulation to access the Retail Data Warehouses. Hyperion is currently used for financial analysis. Clementine is user for Administration systems. Targeting tools are largely self-developed. SAS, CA-Easytrieve, and Excel are also used for localized and custom analyses.

SAS, CA-Easytrieve, and Excel are also used for localized and custom analyses.

2.2.4.1.5 Application Services

Application Development Environment

The programming languages used on mainframes include COBOL II, SAS, assembler, C++, and C. Most Data Center applications are written in COBOL II. CA-IDEAL is used as a 4GL application generator: CA-DATAREPORTER is used as a 4GL report writer. Endeavor/MVS is used for software configuration management.

Unix server applications are generally written in C/C++. Components of ATS are written in Prolog.

The ADE used on NT platforms includes: Microsoft Visual Studio, Microsoft Visual Basic, and Microsoft Visual C++. Web application development uses Microsoft FrontPage, Microsoft Visual Interdev, Active Server Pages (ASP), HTML, VBscript, JavaScript, Perl, Java, and DHTML. Oracle and Microsoft Access databases are accessed using Open DataBase Connectivity.

See the Data Management section for data modeling tools used during application development.

The Customs Internet web site is hosted off-site. A server farm including production, development, test and "hot backup" servers run Netscape Enterprise server or Microsoft IIS software on an NT operating system.

On all platforms, various scripting languages are in use to automate requesting and moving data repetitively.

ABC Flowcharter has been used to document process flows as part of business process reengineering efforts.

Paradigm Plus has been used to develop use cases for NCAP.

Microsoft Access was used to develop the Enterprise Architecture repository application.

The Systems Acceptance Test (SAT) Laboratory performs integration testing for new and revised applications and software products over the WAN. Mainframe, database and web testing is performed in three environments: X.25/Dial, frame-relay and legacy applications for workstation functionality, file and print services, applications and web services and routing.

The Open Systems Laboratory tests infrastructure with three LAN segments connected by frame-relay to the production WAN. Three Customs sites are duplicated; a large central site and two field sites. A 56 Kb frame-relay circuit connects the central and small sites. A 128 Kb circuit connects central to the medium and large sites.

Workgroup Collaboration Services

There is a planned initiative to deploy Lotus Notes to replace cc:Mail.

Document Management

PC Docs is currently used in Customs Headquarters.

2.2.4.1.6 Data Services

Database Technologies

Overall, Customs IT technology routinely supports more than 1 billion database access requests and over 7 million online transactions daily.

On mainframes, CA Datacom/DB is used for most database applications. AES code is generated with DB2 calls, but it is then run through a transparency product to convert the DB2 calls and instructions to Datacom/DB instructions. So, the implemented code interfaces with Datacom/DB.

Oracle and Microsoft SQL Server are currently used workgroup DBMSs. Plans are to migrate to Oracle. Currently Oracle is used, for example for the Retail Data Warehouses. SQL Server is currently used as a data mart by the Office of Strategic Trade. Data is provided by the Wholesale Data Warehouse.

Oracle Procedural Gateway APPC is used to connect from Oracle on Unix to APPC-based mainframe databases.

DBMSs used on desktops currently are: Microsoft Access, FoxPro, and dBase. Plans are to migrate to Access.

Data Warehouse

Extraction and transformation from the source databases to the data warehouses is performed using custom code. Updates to the Enterprise Data Warehouse are scheduled in batch mode. Transactions are continuously loaded into the EDW. Validation and cleaning of data is performed using custom code. Target products to support these capabilities have not been identified.

Approximately 4.5 terabytes of data are stored in the Wholesale Data Warehouse.

Cognos PowerPlay and Impromptu have been used as part of the Retail Data Warehouses, but not web version. The enterprise server is in use to provide access to cubes stored centrally. Data is denormalized; no star schema currently used.

In addition to Cognos, CA-DATAQUERY and QMF are used as query tools on the Data Warehouse or directly on operational data.

CA-DATAREPORTER and CA-Easytrieve are also used as query tools on operational data.

Data Management

For data modeling, the following tools have been used: Oracle Designer, Cool:Gen (Upgrade version of TI Composer), TI Composer/IEF (Obsolete), LBMS (by TECS team), Paradigm Plus. In some cases, DDL has been generated from the data models. Plans are to migrate to Cool:Gen, which is part of the TRM's approved tool suite.

For database management, the following tools have been used: Oracle Toolset, Precise, SavantQ (Diagnostics), Oracle Enterprise Manager. Plans are to migrate to DB2-related tools and Oracle Enterprise Manager

2.2.4.1.7 Integration services

Middleware

CICS is used on the mainframe for transaction and other processing. There are 130–150 unique CICS regions.

Multi-tasking System (MTS) is a set of Customs-developed services for routing messages to mainframe applications. MTS is being replaced by MQSeries.

MQSeries interfaces have been operational for 6 years in some systems. MQSeries can be used for all external requests today. Additional improvements are being made so that MTS will no longer be needed internally within ACS to process messages received via MQSeries. An MQSeries message contains only the EDI request with its associated data elements. Multiple EDI requests may be included in one MQSeries message.

In addition, MQSeries is the data transfer interface used from the mainframe to distributed servers.

CORBA (IONA Orbix, IBM DSOM) and C++ were used in the NCAP prototype. Otherwise, no object technologies are currently in use. Customs' strategy regarding the use of distributed object technologies has not been formulated.

Workflow Management Framework

XTSS is a component of MTS that supported workflow rules (e.g., first-in first-out by broker). When MQSeries/CICS replaces MTS and Extended Task Scheduling Subsystem (XTSS), these workflow rules will no longer be required.

MQSeries Workflow has been evaluated to potentially replace the XTSS workflow management functionality.

Communications (Protocols)

Multiple protocols, SNA RJE, NJE, SNI, LU 6.2, and X.25, support commercial applications. Internal to Customs, LAN/WAN protocols such as IPX/SPX, TCP/IP, and SNA are used. Routers connected to the WAN communicate through Netrix switches that encapsulate a limited amount of TCP/IP traffic into X.25 packets. This encapsulation creates additional overhead and degrades WAN performance.

The existence of multiple protocols on the network creates additional traffic on the LANs and adds complexity to network management and support issues. Customs is standardizing on TCP/IP in conjunction with the WAN Frame Relay implementation. X.25 to Frame Relay conversion is expected to be completed in 2001.

Interchange

Interchange services support electronic data interchange (EDI) and other methods for formatting, packaging, and unpackaging data, including XML and XML-based data protocols

IBM's Data Interchange (DI) server is used to transform incoming data formats to formats supported by the applications.

- Standard Formats: EDIFACT, ANSI X.12
- Proprietary Formats: CATAIR, CAMIR, ABI EDIFACT (Customs-proprietary)

2.2.4.1.8 Common Services

Security Services

Clients to the Customs web site must connect through Customs Raptor Eagle NT firewall, then the Treasury Communications Systems (TCS) firewall in compliance with system security requirements.

Citrix Winframe has been recently implemented as the only product to meet secure dial requirements supporting Customs automation products standard. It is running Metaframe 1.8 on NT Terminal Server 4.0 and services 92 concurrent secure remote dial access users at a maximum speed of 56 Kb. Authentication is required for both the Citrix device and the network to gain access from remote locations. The user base is comprised of home and GSA center telecommuters, Customs Agents and Human Resources personnel and Customs Data Center support personnel.

On MVS, TopSecret is used for managing access control.

Cylink Secure Frame Unit is targeted to support network authentication.

Axiant Intruder Alert, Axiant NetRanger, Shadow (from Navy) are currently used for intrusion detection.

No PKI/certification authorities are currently used. Entrust is the target.

McAfee virus detection software is used.

No enterprise security management software is currently used; Tivoli is the target.

Network Infrastructure

The Customs WAN operates on an X.25 packet switched network (Treasury Communications System), providing connectivity to mainframes and servers. Customs is replacing the current X.25 WAN with Frame Relay.

No Customs sites have public Internet access through the WAN. To compensate, functional organizations have installed stand-alone PCs to connect to the Internet via dial-up modem for critical business requirements.

Currently, Customs uses Cabletron, Bay Networks, Synoptic, and Cisco hubs, routers, and switches. Customs plans to standardize on Cisco products as an enterprise solution.

The Network Infrastructure is largely comprised of SNA devices and protocols. Four 3745/46 900 frame communications controllers with ACF/NCP and NPSI program products provide mainframe access for:

- Ninety-eight 56 Kb X.25 links; connected to the Treasury Communications System (TCS) supporting Customs field locations and other packet switching networks via QLLC and PSH links.
- Two hundred sixty-four toll-free dial lines with maximum line speed of 14.4 KB supporting over 3500 3770/RJE users for ABI, AES and Air Manifest. This is the most heavily used interface for brokers (especially smaller ones). Usage averages 3.5 million minutes per year
- Twenty-one leased EP lines (2.4–19.2 Kb) ASCII connections to various TECS applications (NCIC, CLETS NLETS, PATBATCH).
- Over two hundred EP leased lines with a maximum speed of 56 KB providing access for 3770/RJE, NJE, SNI, 3270 and LAN gateways support ABI, AES, Air Manifest, Air Passenger users, Customs Attaché' Offices in Europe, Asia and South America and Other Government Agencies.

For air, sea, and passenger manifests, Customs currently maintains links to the following external value-added service providers: Advantis, Geisco, ARINC, and SITA.

Eleven escon channels attached 3174-22L controllers support operator consoles and critical support personnel. Each production system is backed up on an alternate for system redundancy and one controller each for Y2K, development, and testing.

The USCS enterprise IP infrastructure design is engineered to support mainframe access for native IP users as well as a large base of remote SNA users. The network is engineered using frame relay as the transport and is designed to provide high availability via redundancy. The frame relay connections are terminated at the data center via a number of “summary” routers, which are connected via switches to a number of “DLSW” routers. The “DLSW” routers provide SNA data link switching peer support, and provide an APPN DLUR function for the remote SNA devices. Via switches the “DLSW” routers are connected to two channel attached routers (CIP’s) which route traffic with the mainframe using two CIP interfaces to each of two Escon channel directors. The mainframes use and advertise virtual IP (VIPA) addresses, and advertise routes using RIP (to be replaced with OSPF). A CMC mainframe (either a primary or backup) provides the APPN DLUS function for the DLUR resources. APPN is implemented to permit non-disruptive CMC recovery of the DLUR resources.

Customs WAN

The Treasury Communications System is an X.25 packet switching network comprised of Bolt Beranek & Newman (BBN) nodes or Netrix Switches, and BBN PADS (Packet Assembler/Disassemblers) on a high-speed backbone with dynamic switching capability. It serves all Bureaus, including Customs, within the Treasury Department. The TCS extends to all states, and the Commonwealth of Puerto Rico. The TCS provides telecommunications 24 X 7 telecommunications service to over 30,000 Treasury Department users. IRS drives the bandwidth requirements and Customs drives the response-time and geographic connectivity requirements. TRW is the vendor with the charter to operate and manage the TCS WAN.

At the Data Center, six BBN nodes and one Netrix node provide access from Customs to the Treasury Communications System (TCS) “cloud”. Field locations connect via SDLC Pad or X.25 to a Netrix node. This connectivity is currently being migrated from the legacy TCS X.25 wide-area network supporting SNA to IP routed over frame-relay. TRW has sub-contracted to Sprint and Qwest for the new backbone network.

Newington/Headquarters MAN

Three channel-attached IBM 3174-11L token ring gateway controllers with fourteen NetSoft SNA gateway PCs defined as down-stream PUs reside on a 16 MB FDDI token ring and provide mainframe access to approximately 2,650 users at the Customs Data Center and two remote locations. LAN segments are approximately 98% Fast Ethernet and 2% token-ring. There are fifty-four Cisco switches and twenty-six Synoptic intelligent hubs throughout the three locations.

Customs LANs/MANs

Currently, Customs has an installed base of over four hundred and fifty (450) Novell 3.X, 4.X and 5.X Local Area Networks (LANs) located at the International Airports, Customs Management Centers (CMCs), Strategic Trade Centers (STCs), major Port Offices, Foreign Mail facilities, Investigation Offices and commercial truck processing offices. Over eight hundred (800) 3274 type controllers are planned to be replaced with either LANs or a PC serving as an SNA gateway. Customs standard cabling topology is twisted pair, Category 5 cabling with Bay Networks concentrators or Cisco switches. All offices are re-cabled in accordance with these LAN standards whenever relocated or under major renovation.

The conversion of larger LANs that have a requirement to access an application on a central site server other than Newington creates a network dilemma with Novell's traffic traversing the frame infrastructure. Traffic load on these point-to-point circuits has been largely unknown, to date, due to the lack of network probes at remote locations. As sites are converted to frame-relay, traffic is routed back to Newington or a decision is made to provide local private virtual circuits (PVCs). Probes are installed at the time of conversion, but it takes time to analyze traffic. There is a loss of control over management of the MAN routers and a potential for non-standard router configurations. The biggest issue is user-developed (unknown, untested) applications, which now must be supported over the WAN and potential network performance problems.

Retaining MAN point-to-point circuits is costly. At select locations, traffic has been determined to be too great to traverse the frame network and local point-to-point circuits may be necessary to permit the Novell traffic to go from site to site. Some of these locations are New York, Detroit, Atlanta, Los Angeles and Chicago.

The 3745 front-end processors (FEPs) are planned to be scaled back, with their functionality migrated to channel-attached Cisco routers. An Enterprise Network Design is depicted in Figure 2.2.2-1 for wide area network and trade access. High volume dial access trade community users are being encouraged to participate in a pilot program incorporating a dedicated frame-relay/MQSeries connectivity solution.

Infrastructure Management

Currently there is no centralized network management system with visibility into the entire network. Sites do not have the architecture necessary to allow monitoring of the remote LANs. Customs is in the process of installing Tivoli Enterprise Network Management System at all sites. Customs has an enterprise license for Tivoli and is using it for servers and desktops. Tivoli is in use or planned to be used for software distribution, inventory, user administration and security. Tivoli has been deployed on Novell servers and on every desktop in NDC. Currently it is used for inventory and just begun use in software distribution. Use of security component expected in

FY2001. The Tivoli database monitors have been tried but not deployed due to version mismatches; Customs has written its own database adapters.

This metropolitan area network, as well as any WAN NetWare 3.X, 4.X and 5.X LANs which are converted to the frame-relay network are monitored and managed through Cisco-Works 2000, Netview 6000, and Visual Uptime on various platforms. All these products report to Tivoli.

Concord is the web-based common performance and trending reporting tool. Network General RMON probes are used for problem isolation. IBM TME Netview for OS/390 products, as well as NTUNEMON, NPM (Network Performance Monitor) and Cisco ISM are currently monitoring from the mainframe.

Tivoli (Fault Coordinator) may also be used in the future for network monitoring.

Customs has been using CA-OpsMVS on mainframes for automated operations. FAR may also be used along with OpsMVS as a target.

TMON (MVS) and PCAnywhere is used for remote control. Tivoli is the target.

For storage management, FDR/ABR is used on MVS, and SpectraLogic Alexandria for Unix. BackupExec is used in the field for storage management.

For performance and capacity management, BMC Software's Best/1 is used on the mainframe. Merrill Associates MXG populates performance databases with IBM SMF/RMF data for OS/390. TMON/CICS & TMON/MVS are used to produce statistics on CICS transactions. Microsoft Performance Monitor is used for performance management on NT servers. Candle and Tivoli are also in use. SAS is sometimes used to access the data and product reports.

Microsoft System Management Server is used at headquarters for software updates and installations.

The Property Information Management System (PIMS), is a mainframe-based system available to track purchase orders, deliveries and perform asset management, but only on select information.

The Network Information Management System (NIMS) is an automated system used to create and manage all of the network definitions required for users to access Customs mainframe systems. This includes requests to the network integrator to provide data communications to support new offices, relocations, or to close a Customs facility. Another component is an automated Procurement Requisition System with an interface to PIMS to create temporary records in PIMS when equipment and software are ordered.

No enterprise solution for asset and network management has been targeted, though Peregrine's Servicecenter, a consolidated service desk, and Tivoli, both contain the capability to perform some overlapping functions currently supported by NIMS and PIMS.

The OIT Help Desk uses Lucent Technologies Automated Call Distribution System (ACD) to route DCE calls to appropriate support personnel. The support staff at Newington has implemented mainframe based CA:Netman as the Call Management System. For calls to the OIT Help Desk, the Help Desk staff logs the calls into Netman and attempts to resolve problems. Problems that cannot be resolved or those requiring service not provided by the OIT Help Desk are passed on to Level 2. A few other very small, in-house developed, problem tracking systems exist in Microsoft Access that do not communicate with CA: Netman.

Peregrine has been piloted in-house for a consolidated help desk. Peregrine is planned to replace the current mainframe-based CA: Netman.

Operating Systems

OS/390 is the operating system currently used on mainframes.

IBM AIX 4.x, Sun Solaris, and NT Server are currently used as application/mid-tier servers. The target is to support Sun Solaris and NT Server.

There are currently about 20,000 desktop workstations. Approximately 11,000 of these are running Windows NT Workstation, and 9500 are running the Windows 3.x operating system. The target is to support Windows NT.

NetWare 3.x, NetWare 4.x are currently used as network operating systems. In the short-term, Customs is upgrading Novell servers to NetWare 5.0. In the long-term, Customs will migrate all Novell servers to Windows NT.

Application Server Services

Customs is presently using both Netscape Enterprise Server and Microsoft's Internet Information Server (IIS) for internal web services. The target is to use IIS.

No application servers are presently in use within customs on Unix or NT servers. No products are currently targeted in this service category.

Email/Messaging

The Customs messaging environment is comprised of mainframe-based CA-Email and Soft*Switch (multiple production and development systems), cc:Mail and Lotus Notes distributed systems as well as various related automated mail interfaces.

There are multiple systems and associated directories to maintain, troubleshoot, and synchronize. The Electronic Messaging and Directory Systems consists of Enterprise Directory infrastructure services (this interoperates closely with mail directories, supports human lookups, and provides interoperable support services for the information infrastructure's distributed computing, network and security processes).

Future plans involve replacing cc:Mail with Lotus Notes.

Storage Management

Customs currently has more than 8 terabytes of DASD online and shared via fiber optic connectivity across all 4 mainframes. IBM-DASD and Hitachi-DASD are all currently used.

Tapes are all cartridges are handled by the tape subsystem (TMS). Most backups are routine database backups. There is also an audit log for CICS called "playback".

IP Services

Native DNS, Native DHCP, and Net ID 4.x for DNS/DHCP are currently used. Net ID is the target product for use in Customs.

Power Management Technologies

All Data Center services on the raised floor area, including all mainframes and servers, have uninterruptible power supplies (UPS). Twenty minutes of backup is the capacity of the 6 UPS systems, 300 KVA each with parallel cabinet. A software component monitors air conditioners, PDUs, chillers, the fire systems, and three generators for spikes. Scripts are run upon notification of the degradation in power and for automatic switching between generators.

Presentation Services

On Windows platforms, 3270/3770 and LU6.2 emulation software from NetSoft is used to connect to the mainframe through a controller over the X.25 network.

Customs evaluated Web-based 3270 emulation products that allow development of Web-based user interfaces to legacy applications without modifying the applications. The preliminary recommendation was Host on Demand. No policy has been established.

3.0 Initiatives, Prototypes, and Systems Under Development

This section provides brief descriptions of many information technology initiatives, prototypes, and systems under development at Customs. These descriptions provide insight into some of the plans and future directions for Customs, but some of the initiatives may be unfunded. It should also be noted that the EA provides baseline and strategic targets that provide insight into the future directions for Customs IT. In addition to the major initiatives listed in this section, Customs maintains and improves existing systems and infrastructure under life support activities.

Two of the key systems for modernization of trade compliance include ACE and ITDS. These are described in more detail at the end of this section.

3.1 Managed Service Provider

Customs has initiated a pilot project to implement managed services at the LAN and desktop level (aka, seat management) required to provide an acceptable level of service for the distributed computing environment under current funding levels. Through the creation of service level agreements and contractual incentives and credits, the managed service contractor will provide improved levels of support and system availability that will improve user satisfaction and allow employees to focus on their primary mission duties.

3.2 Disaster Recovery and Contingency Planning

The Disaster Recovery and Contingency Planning initiative will assist Customs with disaster recovery and contingency planning so Customs can sustain uninterrupted functions for its mission critical systems. This would include, but not be limited to, emergency response procedures, alternate back-up operations plans, and post-disaster recovery procedures to facilitate the rapid restoration of operations.

3.3 Lotus Notes Infrastructure

Customs has a requirement for a secure enterprise Electronic Messaging System. The two mail systems currently implemented; CA-Mail and cc:Mail are at maximum capacity due to rapidly increasing volumes of electronic mail. Lotus Notes has dropped maintenance and support of cc:Mail. Without vendor maintenance and technical support, Customs will inevitably encounter compatibility problems. The goal is to leverage modern technologies and realize cost savings in designing, implementing and using a single Email capable system which is fully integrated with groupware features of Notes.

3.4 Customs Enterprise Network and LAN Infrastructure

The project is to design, implement and maintain a secure Enterprise Network Infrastructure based on the requirements from applications under development, current distributed pilots, and recommendations from independent technological research studies. The infrastructure model includes network and local area network

hardware, software, communications, wide-area network and local area network management tools, staff and support.

An ATM/Frame-relay network is required to support the large amounts of data to be processed by Customs decision support and analytical systems (ACE, TAP, ATS, QIK and HRIS). Customs strategic direction is for Web-based applications running on a secure TCP/IP router based network with sufficiently powerful workstations to run these applications.

Standardized trade interfaces for all commercial applications are required to support increasing workload volumes. These new interfaces will reduce cargo release time and improve accuracy in key statistics.

Customs is unable to migrate existing network and computer infrastructure. Conversion is underway from an X.25 network backbone (BBN nodes and Netrix switches) to an ATM/Frame Relay network and is planned to be completed by 2001. Upgrades to and replacement of the existing workstations to provide the necessary capacity to support the new applications is also under way. Y2K compliance efforts replaced 90% of the targeted non-compliant personal computers in 1999.

3.5 Customs Enterprise LAN Infrastructure Support

This project provides contracted support to the new LAN Infrastructure. Support includes 24 x 7 (currently 8 x 5) technical support of new Customs client-server applications such as EDW, TAP, ATS, IVR and OST; the new Enterprise NT Domain and NDS Tree centralized administration; Tivoli performance monitoring, software distribution and inventory control as required by Customs strategic plan. Also included is technical support from major vendors.

3.6 Human Resources Information System – HRIS

Human Resources Information System (HRIS) is being developed to deliver more accurate, timely data across Customs within a technical architecture that will serve the current needs and be flexible enough to support anticipated future needs. With PeopleSoft at its core, it is planned as a multi-phased initiative designed to be implemented over two years. When fully implemented, the HRIS will serve Human Resource Management as the primary source of employee and organizational data to support daily operating processes for the entire Customs. The first phase eliminates legacy HR systems. The second phase includes the payroll interface to the USDA and establishment of the full employee database, hire maintenance, benefits, government reporting, corporate reporting and performance management.

3.7 SEACATS/AFTRAK/CATS Interface

The project provides for linkage of the Customs seized/forfeited property management system (SEACATS) with the systems used by the IRS, ATF, Secret Service, and DOJ. This will address the requirement for the Federal government to report, in total, all seized assets.

3.8 Internal Affairs and Labor Employee Relations Automated System

The project involves system development for, testing, software licensing, and implementation of a Windows-based user-friendly system for joint use by Internal Affairs and Labor Employee Relations to record misconduct and discipline; and provide a graphic data retrieval tool to facilitate reporting from the new system. This system will track allegations through the investigation process, and on to final disposition and discipline.

3.9 Quality Planning for Asset Management (QPAM)

QPAM was established to streamline the Asset Management Process that includes the functional areas of: Plan, Budget, Acquire, Pay/Expend, Monitor and Control, and Report. Customs' current asset management processes and systems cannot meet the requirements of the legislation and cannot capitalize on the reform efforts.

3.10 Retroactive Flagging for Reconciliation

This project will provide the capability for filers to identify/flag entry summaries for reconciliation, with Customs approval, after the entry summary filing date.

3.11 Internal Affairs File Management System Enhancements

This initiative will provide system enhancements to improve data accuracy and reports. They include but are not limited to additional system edits, user friendly menu driven input screens, streamlined reference tables (current codes vs. Historical codes), scheduled system generated management reports and ad hoc report generations.

3.12 Electronic Freedom of Information Act

The implementation of a COTS, document management system to support major requirements: executive correspondence control (ECC), and electronic FOIA process (EFOIA).

3.13 International Trade Prototype (ITP)

The International Trade Prototype (ITP) is a test of internationally coordinated export and import Customs procedures that is being conducted jointly by the United States Customs Service and Her Majesty's Customs and Excise (HMCE) of the United Kingdom. ITP is a major project to develop, test, operate, and evaluate a prototype that allows goods to move across borders on the basis of minimal information supplied electronically in the exporting country. It is a prototype and is targeted to be integrated into the ACE system. Its primary purposes are:

- To allow U.S. Customs and HMCE to test the concept of sharing minimal standardized export information to expedite the release of cargo at the import destination
- To Integrate import and export transaction processing into a single automated system

- To facilitate direct, real-time exchange of transactional data between U.S. Customs and a foreign customs authority
- To Use the Internet for Trade submission of transaction data using Virtual Private Network technology to secure the Internet transactions

3.14 Document ACS Functionality

This initiative will develop a complete set of functional descriptions for the entire Automated Commercial System. This will establish a core capability in ACS that will enable all development to comply with the documentation requirements of the Systems Development Life cycle.

3.15 Capability Maturity Model (CMM)

CMM will implement a comprehensive software and acquisition process improvement program that optimizes performance using measurable feedback.

3.16 Internal Affairs File Management System Enhancements

Customs performs ongoing system enhancements to improve data accuracy and reports. They include but are not limited to additional system edits, user friendly menu driven input screens, streamlined reference tables (current codes vs. Historical codes), scheduled system generated management reports and ad hoc report generations.

3.17 Automated Commercial Environment

On April 19, 1994, Commissioner George J. Weise established the initial ACE Development Team, and chartered the team to redesign the Automated Commercial System (ACS). The initial ACE Development Team used the *Report of the Future Automated Commercial Environment Team*, issued December 30, 1993, as the conceptual starting point for the redesign of the Customs commercial system. The initial ACE development efforts resulted in a collection of documents and an ACE prototype named the National Customs Automation Program Prototype (NCAP/P).

As described in the referenced documents, the Trade Compliance Process is responsible for maximizing trade compliance through a balanced program of informed compliance, targeted enforcement actions and facilitation of complying commercial cargo entering the U.S. border. The Trade Compliance Process is related to the inbound movement of merchandise and conveyances into the U.S., and is responsible for ensuring that cargo entering the U.S. is compliant with import laws and regulations. The goals of this process are:

- To maximize trade compliance of trade laws in the top 125 HTS, statistical accuracy, and revenue collection
- To effectively deploy Customs resources, increasing efficiency by reducing cycle time, processing increasing workload with available resources, and reducing "exception" processing

- Raise customer satisfaction levels by reducing cycle time, establishing account processing, and emphasizing voluntary informed compliance over “enforced compliance”

The objective of maximized trade compliance is achieved by identifying and managing potential risk.

The redesigned trade compliance process shifts Customs focus in two key ways:

- By shifting emphasis from individual transactions to aggregated, account-based information
- By emphasizing the core concepts of voluntary informed compliance, shared responsibility, and reasonable care

An account-based approach should enable Customs to manage its workload more efficiently by aggregating information to more meaningful levels, facilitating the measuring and tracking of informed compliance, and providing a more meaningful way to fulfill its financial management responsibilities.

The Trade Compliance Board of Directors visualized Customs commercial cargo processing as five interrelated processes: *Service Accounts*, *Target*, *Verify*, *Enforce*, and *Manage Revenue*; and one critical output: *Report International Trade Statistics*. The following is a high-level description of the redesigned trade compliance processes:

- **Service Accounts.** The Service Accounts process will establish and maintain business relationships with accounts in the trade community with the intent to facilitate informed, voluntary compliance with U.S. trade laws and associated import regulations. This process includes outreach and education functions and will provide a national, aggregated view of each account’s transactions and its corresponding trade compliance activity.
- **Target and Analyze.** This process includes activities (both automated and manual) used to ensure effective identification of potential trade compliance infractions (called *assertions*). The Target and Analyze process refers selected assertions to the Verify process to ensure prioritized, effective enforcement and informed compliance actions.
- **Verify.** The Verify process employs examinations, data reviews, and audits to verify the compliance of accounts, detect trade violations and interdict contraband. This process may require interaction with the trade (the filer) to collect supplemental information. The results of the Verify process can be closure (of a referral), or generation of a referral to the appropriate process (Enforce or Service Accounts) for the appropriate enforcement or informed compliance action.

- **Enforce.** This process includes all actions supporting the enforcement of trade laws and includes seizures of commercial cargo, investigations, and penalties. The ultimate goals of enforcement actions are to enforce the law and to increase future compliance with those laws.
- **Revenue.** The revenue process includes all collection, management and reporting of revenue received and disbursed by Customs as a result of its business functions. Development of these activities and additional revenue functions of the Trade Compliance Process is in accordance with the CFO act of 1990.

The Board of Directors essentially excluded exports from the scope of Trade Compliance because of the differences between the import and export processes and the laws governing Customs' responsibilities for them. However, the export process has a number of basic requirements, which are consistent with the overall Trade Compliance direction and requirements for ACE, including but not limited to:

- Establishment of and tracking by accounts
- Targeting and analysis capabilities
- A standard suite of methods and data syntaxes for interfacing with the trade, government agencies, and the general public
- Financial controls and linkages to the revenue accounting system
- Collection, extraction and dissemination of data for statistical purposes
- Linkage of export transaction data with any corresponding import data, e.g., drawback, temporary importations under bond, transportation/exportation movements

ACE development was not the only development effort at the time; however, it was responsible for integrating the efforts of multiple projects in order to provide a single, seamlessly integrated system for international trade. The eventual integration of the Automated Export System (AES) into ACE was viewed as a critical part of that integration effort.

3.17.1 NCAP Prototype

NCAP was developed in response to legislative requirements in the Customs Modernization Act and to demonstrate selected aspects of the trade compliance program, such as Track 4 processing. It is currently deployed and operational at three ports of entry: Detroit, Port Huron, and Laredo.

After pre-identifying parties to transactions, their relationships, and commodity data, trade participants will be able to import goods at the given locations with a minimal amount of data before arrival. Entry summary data will be transmitted electronically after the border crossing. This will allow Customs to provide for payment of duties,

taxes, and fees on a monthly statement cycle and to generate detailed summary reports of accounts on a monthly basis. Other planned components of NCAP include electronic bond filing, electronic penalty processing, and remote location filing.

NCAP/P Design Documentation was not included in the bidder's library as it is regarded as too detailed and limited in scope to provide insight into the overall Customs Modernization tasks.

Table 3.17.1-1 describes the initial subject areas that were identified for ACE. Subsequent ACE and NCAP design efforts as well as the Customs Enterprise Architecture documented the information requirements of the trade compliance process.

Table 3.17.1-1 Primary ACE Subject Areas

SUBJECT AREA	DEFINITION	INFORMATION EXAMPLE
Accounts	Basic information associated with customers to provide a total picture of their Customs-related activities.	Customer account information, internal information supplied by account (audit), profile & activity information, training & other history
Collections	The receipt of monies from customers via various payment methods.	Duty, tax, user and harbor maintenance fees, collection, deposit
Commodities	Items capable of yielding commercial advantages, whose movement, importation, exportation or storage is of interest to Customs.	Harmonized Tariff Schedule of the United States (HTS), HTS explanatory note
Communications	Information to inform both internal and external customers about trade rules, Customs standards and other relevant topics.	Activity alert, bulletin board message, help, publication, pamphlet, training program, internal message and survey
Conveyances	Vehicles, vessels, aircraft, or other modes of transportation, which are being used or have been used in, or to aid or facilitate, the movement of commodities.	Carrier, manifest, issuer, conveyance mode, port of lading

CUSTOMS SYSTEMS AND INFRASTRUCTURE OVERVIEW

SUBJECT AREA	DEFINITION	INFORMATION EXAMPLE
Countries	Political entities recognized by the U.S. as known nations. Colonies, possessions, or protectorates outside a mother country are considered separate countries. (CFR 134.1 (a))	Trade agreement (bi-lateral), visa requirement, special programs such as Generalized System of Preferences and NAFTA
Customers	Firms, organizations, persons, or other government agencies with which Customs has a business, service or informational relationship.	Unique identification items about customers such as their business name, tax id number, and general business description, survey history
Enforcement Actions	Actions taken to enforce compliance of laws, trade agreements, Customs regulations or other authority.	Case information, enforcement action report, fine, penalty amount, sanctions data, and seizure information
Locations	Sites where foreign and domestic trade activities of interest to Customs are performed.	Information about ports of entry, warehouses, foreign ports, container exam stations, and foreign trade zones
Performance Measures	The set of quantifiable indicators whereby trade compliance, operational throughput, and processing efficiencies are measured.	Survey result, cycle time
Protests	The legal means whereby importers, consignees, or other designated parties may challenge decisions made by Customs.	Status, decision, filing information, protested issue
Receivables	The proper recording and reporting of revenue-related transactions to support ACE account information with respect to amounts due from customers excluding FP&F amounts	Bill, debit voucher, statement
Resources	People, tools and facilities that are available for Customs operations	Data on skills, hours of operations, workload and operational capabilities by geographic dispersement
Standards	A set of fixed guidelines, procedures and methods used to perform any business function, to establish baseline levels for performance measurements, and to quantify performance indicators to ensure optimum productivity	Bond, certification, & compliance standards, operating procedure, special handling instruction, verification instruction

SUBJECT AREA	DEFINITION	INFORMATION EXAMPLE
Supporting Documents	Other data forms and documents used to support the verification of trade transactions	Invoice, purchase order, contract, catalog, commodity specification sheet, certificate of origin
Targeting Rules	The statistics based criteria and rules used to determine which customers and trade transactions require verification	Targeting algorithm, filer information, review type, other government agency requirements
Trade Rules	The collection of all Federal, International, State & Local laws, regulations, and agreements applying to the movement, importation, exportation, or storage of goods, establishing compliance requirements.	Regulation, ruling, agreement, control and statute
Trade Transactions	Declarations/claims of imported or exported commodities potentially subject to duties, taxes, fees, import controls, general public safety, or any trade rules at the time of presentation to Customs	Import Declaration (for entry and in-bond moves), drawback claims, shippers export declaration, manifest/bill-of-lading, and data required for other government agencies
Trade Statistics	The information collected by Customs during the processing of data and execution of procedures	Trade data, port statistics, terminal statistics
Users	The collection of individuals who will utilize the ACE system.	Audit trail information, change history, access authority, user id
Verification Results	The recording of the final results of all verification activities in a standardized manner, including narrative, if applicable.	Audit results, exam and data review findings, declaration discrepancy, laboratory result, quantity verification

3.18 ITDS

The International Trade Data System (ITDS) will accommodate the need for a single interface for all trade stakeholders to submit data and to retrieve data and reports. Trade stakeholders include all commercial trade organizations as well as all government agencies. The functionality of ITDS is now part of Customs Modernization and will be implemented as part of ACE.

The current international trade-processing environment is characterized by a multitude of proprietary paper and stand-alone electronic systems that often confound the trade community with duplicative and non-uniform data requirements

and filing procedures. The current import and export systems are inadequate to support the more than 100 Federal agencies in executing their regulatory and enforcement responsibilities and in facilitating the more than 350,000 businesses involved in international trade.

The International Trade Data System was conceived as a solution to the current trade-processing environment. It represents a new, Government-wide strategy for expediting trade and improving regulatory enforcement in a seamless environment. The basis for that strategy was put forth in the National Performance Review (NPR) IT06 Report.

Additional documents that assisted in the conceptualization and formalization of the ITDS project include the following:

- Future Automated Commercial Environment Team (FACET) Decision Package, March 22, 1994
- Concept and Recommendations for an International Trade Data System", Report for the Government Information Technology Working Group of the National Information Infrastructure Task Force, prepared by the IT06 Task Force, May 1995

The operational concept for ITDS incorporates state-of-the-art technology to expedite cargo movement and improve system and data access while delivering user-friendly functionality in a secure and controlled environment. The system was planned to feature a commercially based data set, a single interface between the trade community and oversight agencies, and be fully electronic. The major components of ITDS were planned to be Border Operations; Licensing and Permitting; Statistics, Analysis, Policy and Reporting; and Trade Promotion.

The goal of ITDS for the government is to provide more current and accurate information for revenue, public health and safety, enforcement activities, and statistical analysis, and significantly reduce data processing development and maintenance costs. Federal regulatory agencies include those agencies with mandated risk management or selectivity responsibilities and US border inspection agencies (e.g., Customs, FDA, APHIS, CPSC, DOT, etc.). Other Federal agencies include the non-regulatory or enforcement agencies such as the Census Bureau and Commerce.

The goal of ITDS for the trade community is to provide a common data set derived from commercially available data and terminology, improved communication, more timely processing, new transaction monitoring capabilities, new query and report capabilities, new query and report functionality for their own and other data they are authorized to access, and a single streamlined process. The trade community includes the trade – importers, exporters, manufacturers, brokers and other private

entities involved in international trade – and transportation carriers – freight forwarders, freight consolidators, and carriers directly involved in transporting cargo. Figure 3.18-1 provides a description of the primary functionality provided by ITDS to the different user communities.

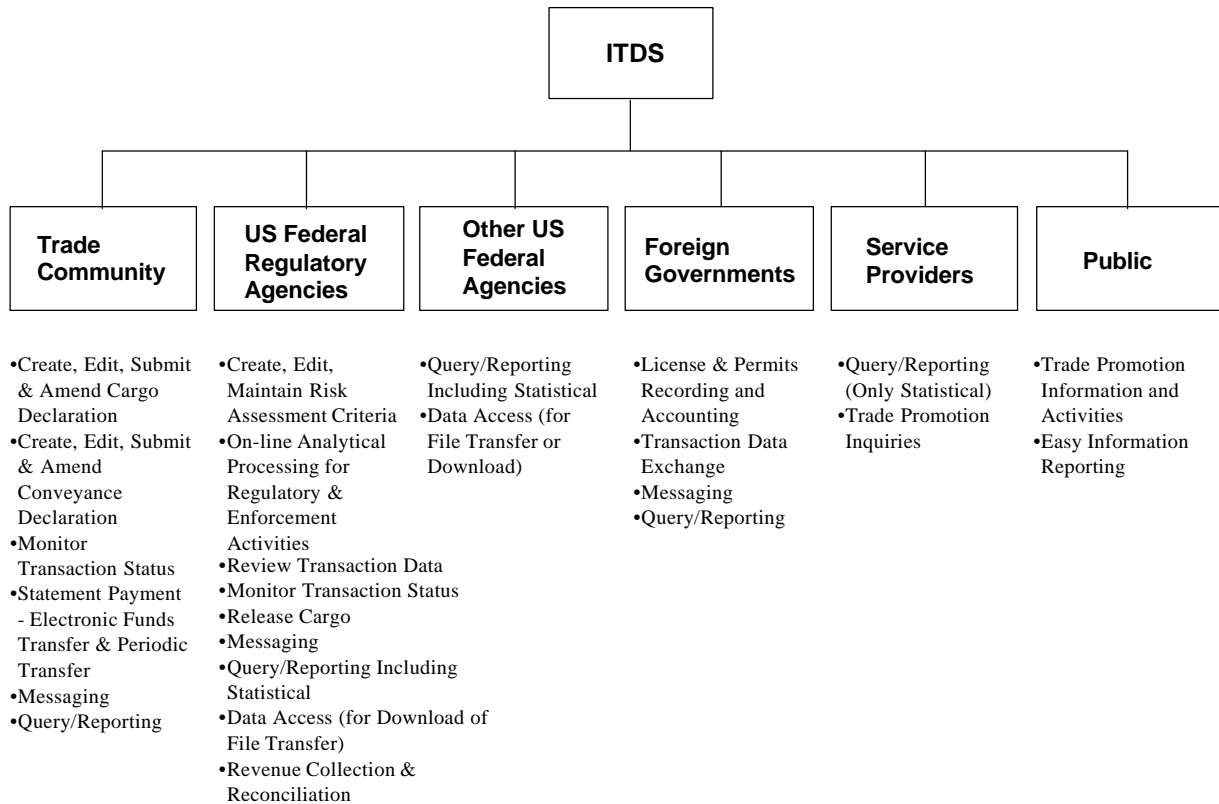


Figure 3.18-1 Primary Functionality of ITDS for User Communities

Documents contained within the ITDS Design Report are as follows:

Project Summary and Reference Documents

Volume 1. ITDS Architecture

- *Business and Concept, Volume 1 Overview*
- *Concept of Operations for the International Trade Data System, September 1998*
- *Data Standardization*

- *Data Model*
- *Data Flow Diagram*
- *User/Functional Requirements for the International Trade Data System*
- *Technology Infrastructure*

Volume 2. Technical Reference Model and Standards Profile

Volume 3. Implementation and Maintenance

- *Operations, Management and Maintenance Overview*
- *Cost/Benefit Analysis*
- *Project Administration and Long-Term Strategy*
- *Configuration Management Plan*
- *Risk Management Plan*
- *Project Implementation and Transition Plan*
- *Training Plan*
- *Compliance, Certification, and Waivers*

3.19 North American Trade Automation Prototype (NATAP)

In 1994 the NAFTA governments (U.S., Canada and Mexico) formed the Information Exchange and Automation Working Group to design, develop, implement, and evaluate a model trade process called the North American Trade Automation Prototype (NATAP). NATAP was operational at four border sites during the period of April 1997 to March 1998. The results of the prototype are documented in the *Final NATAP Trilateral Report*, dated June 17, 1998. The prototype made use of a standard data set and coding; harmonized paperless processes for data filing, border crossing, and driver registration; and a fully electronic environment.

A key component of NATAP's total electronic border crossing was the use of radio frequency identification devices (RFID), or transponders. Using windshield-mounted, user-programmable transponders, the NATAP Dedicated Short Range Communications (DSRC) system detected the arrival of a truck at the border, identified the truck and distinguished the lane at the inspection booth, transferred the transaction data for processing, and sent the status of the transaction back to the transponder for display inside the truck. The NATAP prototype coordinated the DSRC technology test among various interests (e.g., transportation, immigration, customs, and toll collection) within the three governments. Two separate types of interoperable DSRC systems were tested, Hughes and Mark IV.

4.0 References

This section provides a list of documents containing more detailed information about the Customs systems and infrastructure. These are available in the Customs Modernization Bidders Library.

4.1 ACE Documents

4.1.1 ACE Strategic Information Management Plan, December 1994

This document, the initial deliverable of the US Customs Service ACE development team, established the background and charter for the ACE project. It includes the basic requirements for ACE and a conceptual view of the envisioned system; however, offerors are not required to adhere to the sections describing project approach, architecture, and implementation and transition.

4.1.2 Trade Compliance Road Map, January 1998

This document was developed as a reference for Customs employees to explain the core themes and key initiatives of the Trade Compliance Redesign, to inform them of the direction of the trade compliance process, to prepare them for the future work environment, and to establish roles and responsibilities.

4.1.3 ACE Business Plan, July 16, 1999

This document is intended to be a living document that provides a baseline of information on the ACE program. It includes descriptions of information reflected in the RFP, such as business drivers and anticipated benefits of trade compliance modernization; however, offerors are not required to adhere to the sections describing technical approach, implementation and deployment.

4.1.4 ACE User Requirements Document, October 1995

This document captures the results of an initial Business Process Reengineering (BPR) effort for ACE. It contains detailed narratives, process area descriptions, and descriptions of key data including entity-relationship (ER) diagrams. The structure and names of process areas evolved in later BPR efforts.

4.1.5 Business Process Reengineering Support for ACE Development Team: Process Flow Documentation, October 1996

These process flows describe the redesigned trade compliance process down to the task level. In preparation for the Customs Modernization RFP, MITRE and Customs conducted a requirement tiger team to validate the process flows down to level 3 and collected supplemental information such as key data, roles, and frequency.

4.1.6 JFMIP Core Financial System Requirements, JFMIP-SR-99-4, February 1999

This document describes the mandatory requirements, which must be satisfied by any software prior to it being qualified for use by Federal agencies. These

requirements form the basis for the Federal government to test compliance of commercially based, core financial software, including financial management software supporting US Customs Revenue and Finance business processes. Additional information is available at the URL:

<http://www.financenet.gov/fed/jfmip/pmo.htm>.

4.1.7 US Customs Service, Trade Compliance Risk Management Process, March 1999

The Office of Strategic Trade (OST) process produced this brochure to describe and promote the concept of an overall risk management process. This is the through which risk areas for trade compliance are identified and prioritized in order to maximize the effectiveness of the workforce.

4.1.8 International Trade Data System (ITDS) documents

<http://www.itds.treas.gov/>

The original scope and plan for implementing the ITDS, a single system for international trade information, is described in the collection of documents available at the referenced URL. The Customs Modernization project is now responsible for implementing the ITDS functions.

4.1.9 ITDS Design Report

The Design Report is a collection of all ITDS Design documents that includes a project summary, a list of reference documents, and the following three volumes: ITDS Architecture; Technical Reference Model and Standards Profile; and Implementation and Maintenance.

4.2 Treasury and Customs Architecture Documents

4.2.1 Treasury Information System Architecture Framework (TISAF), v1.0, January 1997

The TISAF provides guidance to the Department of the Treasury bureaus concerning the development and evolution of information system architectures to meet the needs of business operations. The TISAF is available in Microsoft Word and Adobe Portable Document Format (PDF) at the following URL:

<http://www.ustreas.gov/tisaf>

4.2.2 Customs Enterprise Architecture

The Enterprise Architecture (formerly known as the Enterprise Information Systems Architecture or EISA) documents the Customs Architecture's Work, Functional, Information, and Infrastructure views. The architecture consists of a collection of

documentation including a Blueprint, Developer's Guidance, and a Repository. The Repository is a tool based upon a Microsoft Access database.

4.3 Current Systems

4.3.1 Automated Commercial System (ACS) Website

<http://www.customs.treas.gov/imp-exp2/auto-sys/acs.htm>

This website contains information that describes ACS; the current automated information system for the trade compliance process.

4.3.2 An Assessment of the Automated Commercial System (ACS), Gartner Consulting, January 1998

This document provides an independent assessment of the state of the Automated Commercial System (ACS) and provides a recommended course of action.

4.3.3 Trade Compliance Tools, Automated Tools and Other Resources, A Resource Guide for Measuring and Improving Compliance, Version 2.0, USCS/OST, July 1999

This document includes information on automated tools for managing risk in the trade compliance process, Trade Compliance Programs, and the Risk Management process. It contains a list of available reports, user manuals, and Standard Operating Procedures. Information regarding ACS is not included in this document.

4.4 General Customs Information

4.4.1 United States Customs Service (USCS) Website

<http://www.customs.treas.gov/>

4.4.2 Importing Into the United States, A Guide for Commercial Importers, United States Customs Service publication #504, Revised November 1998

This publication provides an overview of the importing process and contains general information about import requirements. It also describes the Customs organization and its mission. Instructions for ordering a copy of this publication are available in the Customs website, and an HTML version is available at the following URL:

<http://www.customs.treas.gov/imp-exp2/pubform/import/index.htm>

4.4.3 The Customs Modernization Act (the “Mod Act”) (Title VI of the North American Free Trade Agreement Implementation Act [P.L. 103-182, 107 Stat. 2057], effective December 8, 1993)

This legislation is the primary business driver and legal foundation for Customs Modernization efforts. It mandates business improvements grounded in the concepts of informed compliance, shared responsibility, and reasonable care.

4.4.4 Informed Compliance Strategy, Memorandum for the Trade Community Members from the Commissioner of the United States Customs Service, Dept. of the Treasury

<http://www.customs.treas.gov/imp-exp1/comply/ma-incmp.htm>

This memorandum describes for the trade and Customs officers the strategy and process involved in maximizing trade compliance through an informed compliance program that supports and promotes the use of reasonable care by all who do business with Customs.

4.4.5 U.S. Customs Service Accountability Report, Fiscal Year 1998

This report meets the requirements for various U.S. government financial reporting requirements such as the Government Performance and Results Act of 1993 (GPRA) and the Chief Financial Officers Act of 1990 (CFO Act). It focuses on Customs mission accomplishments and presents financial management information. This document is a useful source of high-level information regarding Customs' mission and workforce. This document may be downloaded or viewed at the following URL:

<http://www.customs.treas.gov/imp-exp2/pubform/ar1998.htm>

4.4.6 LAN and Naming Conventions

This collection of documents contains detailed configuration, naming, and installation instructions for Customs hardware (workstations and servers) and software components (commercial and customs) of the Customs LAN environment.

4.4.7 U.S. Customs Service IS Security Policy and Procedures (Customs Issuance System Handbook 1400-06), June 1999

This document establishes responsibilities, roles, and uniform procedures for implementing the Information Systems (IS) Security Program with the U.S. Customs Service (Customs). It provides policy and procedures to protect all Customs information collected, processed, transmitted, stored, or disseminated in its general support systems and major applications.